

A large, stylized outline of the state of Illinois serves as a background for the text. The outline is black and follows the general shape of the state, including its irregular western and southern borders.

1953 ILLINOIS CORN TESTS

**Variety performance
Seed treatment
Rate of planting**

**Bulletin
571**

**UNIVERSITY OF ILLINOIS
AGRICULTURAL EXPERIMENT STATION in cooperation with
ILLINOIS STATE NATURAL HISTORY SURVEY . . . January, 1954**

Location of
1953 test
fields



CONTENTS

PLAN OF TESTS, GROWING CONDITIONS, INSECTS, SEED TREATMENTS, AND DISEASES.....	PAGE 3
MEASURING PERFORMANCE.....	13
OPEN PEDIGREES.....	14
CONTRIBUTORS.....	15
RESULTS OF VARIETY TESTS.....	16-25
Northern Illinois: DeKalb.....	16
West North-Central Illinois: Galesburg.....	18
Central Illinois: Urbana and Sullivan.....	20
Southern Illinois: Brownstown.....	22
Extreme Southern Illinois: Ridgway and Dixon Springs.....	24
SOIL AND PLANTING RATE ADAPTATION TEST.....	25
SUMMARY.....	29
INDEX.....	30

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culture teachers: RAY DUNN, *Galesburg*; and H. C. BISHOP, *Eldorado*.

1953 ILLINOIS CORN TESTS¹

ILLINOIS harvested the fifth largest corn crop in its history in 1953. Total production was about 491 million bushels, and the average state-wide yield was estimated at 54 bushels an acre. This is 4 bushels an acre under the 1952 average but 3 bushels above the 1943-1952 ten-year average.²

Hot, dry weather during the late summer and fall permitted general harvesting to begin the first week of October. The grain moisture at harvest was the lowest in many years and the quality was generally excellent.

PLAN OF THE TESTS

Number of hybrids and their sources. Two hundred sixty-eight hybrids were grown on five regular test fields. Nine single-cross hybrids were grown on three special test fields which differed in productivity. Forty-three companies and individuals and the Illinois Station furnished seed for the tests.

Eighty-one hybrids were grown at Galesburg, Urbana, and Brownstown. Seventy-five entries were tested at DeKalb and 60 at Ridgway. (For a summary of results on these fields, see Table 1.)

A representative of the Illinois Station or of the Illinois Crop Improvement Association collected seed for planting the test fields directly from the warehouses of the producers entering the corn. Seed of Illinois and U. S. hybrids in commercial production was obtained from the producers of these hybrids and also from the Illinois Seed Producers Association.³

Selection of entries. Each year seed corn producers are given an opportunity to nominate hybrids for testing on the various fields. For some fields the number of hybrids nominated is so great that they cannot all be tested. For these fields selection is based partly on the quantity of the hybrid that is produced and partly on the area where it is sold.

¹ By J. W. PENDLETON, First Assistant in Crop Production; BENJAMIN KOEHLER, Professor of Crop Pathology; A. L. LANG, Professor of Soil Fertility; P. E. JOHNSON, Assistant Professor of Soil Fertility; J. H. BIGGER, Entomologist, Illinois State Natural History Survey. ² Estimates of the average yield for the state were furnished by the ILLINOIS COOPERATIVE CROP REPORTING SERVICE, Illinois State Department of Agriculture cooperating with the U. S. Department of Agriculture.

³ Hybrids supplied by the Illinois Seed Producers Association were single crosses used in the Soil Adaptation test.

Table 1.—GENERAL INFORMATION: Illinois Cooperative Hybrid Corn Tests, 1953

Field, county, location and number of entries	Date planted	Date harvested	Average acre- yield	Moisture in grain	Erect plants	Stand
			<i>bu.</i>	<i>perct.</i>	<i>perct.</i>	<i>perct.</i>
DeKalb: DeKalb N75.....	May 13	Oct. 27	101.4	15.9	98	83
Galesburg: Knox WNC 81.....	May 21	Oct. 23	92.7	14.3	75	87
Urbana: Champaign C 81	May 12	Oct. 21	100.9	11.7	94	92
Brownstown: Fayette S 81.....	May 28	Nov. 3	39.9	13.9	97	93
Ridgway: Gallatin Ex.S 60.....	June 2	Oct. 29	96.1	16.2	98	83

COOPERATORS: RALPH ANDERSON, *Knox county*; DR. H. O. LEWIS, and EARL SCHWARM, *Fayette county*; JOHN C. MCGUIRE, *Gallatin county*. Fields in DeKalb and Champaign counties were located on University farms managed by R. E. BELL and C. H. FARNHAM.

A number of promising experimental hybrids are also included in the tests. Other hybrids are grown to meet the field-performance requirement for certification. A few Station-produced open-pedigree hybrids are included at each location. The 1953 performance of additional experimental hybrids is reported in Illinois Bulletin 572.

Soil characteristics of fields. The test fields are usually medium to high in productivity, and each represents a soil type common to the region where it is located. Each field is selected for uniformity in soil type, productivity, and drainage. Approximate locations of test fields are shown on the map on page 2. Soil characteristics and management are described in Table 2.

Field-plot design. A 9 x 9 randomized, lattice-square field-plot design with 5 replications was used on the Galesburg, Urbana, and Brownstown fields. Controlled, randomized block designs were used at the other locations.

Method of planting. All test fields were planted by hand on land prepared in the regular way for corn. Individual plots consisted of 2 rows 5 hills long. Four kernels were planted to the hill at DeKalb, Galesburg, and Urbana; three kernels were planted at the two southern locations.

GROWING CONDITIONS

In central and northern Illinois the 1953 growing season was generally favorable. Large areas of southern Illinois, however, suffered perhaps the worst drouth since 1936.

All test fields were planted in excellent seedbeds and early

Table 2.—TEST FIELDS: Soil Characteristics, Management Practices, and Rainfall in 1953

Soil type	Lime require- ment	Available phosphorus	Available potassium	Previous crops, soil manage- ment, and rainfall
NORTHERN: DeKalb				
Flanagan silt loam....	2	High	Very high	Corn 1949; oats 1950; red clover 1951; corn 1952; 200 pounds 0-20-0 and 300 pounds sodium nitrate plowed down; rock phosphate applied in 1950 Rainfall (inches) May 2.59; June 3.40; July 4.85; August 0.70
WEST NORTH-CENTRAL: Galesburg				
Muscatine silt loam..	3	Very high	Very high	Corn 1949, 1950; oats 1951; alfalfa-brome hog pasture 1952; rock phosphate and limestone applied in 1946 Rainfall (inches) May 2.86; June 3.7; July 2.69; August 1.32
CENTRAL: Urbana				
Drummer silt loam....	0	High	Very high	Soybeans 1950; corn 1951; 1952, 12 tons manure applied fall of 1952; 300 pounds ammonium nitrate plowed down; rock phosphate and limestone applied in past Rainfall (inches) May 1.94; June 2.92; July 3.88; August 0.68
SOUTHERN: Brownstown				
Cisne silt loam.....	2	High	High	Wheat (clover) 1949; corn 1950; oats 1951; clover 1952; 300 pounds muriate potash broadcast before corn planting; 200 pounds ammonium nitrate side-dressed at second cultivation; rock phosphate and limestone applied in past Rainfall (inches) May 1.64; June 4.20; July 1.28; August 0.46
EXTREME SOUTHERN: Ridgway				
Starks silt loam.....	2	Medium	High	Corn 1950; wheat 1951; red clover 1952; 160 pounds 3-12-12 applied in row at planting time; rock phosphate and limestone applied in past Rainfall (inches) May 1.84; June 1.84; July 4.72; August 0.89

The soil type names were approved by HERMAN WASCHER, Assistant Professor of Soil Physics. Rainfall gages courtesy of G. E. Stout, Illinois State Water Survey.

growth and development were fine. At Brownstown the vegetative growth indicated a bumper crop, but a moisture deficiency developed in July and yields were disappointing (see rainfall, Table 2). Moisture at other locations was good to excellent.

The only test field on which stalk breakage was prevalent was at Galesburg. Breakage there was the result of the most severe infestation of corn borer noted in any variety trial since 1949 (Table 3). Stalk rot was also present and partly responsible for the lodging at this location. Stewart's disease and stalk rots were

present in sufficient quantities to warrant notetaking at Urbana and Ridgway respectively.

Ideal drying and harvesting weather characterized the fall, and grain moisture was the lowest in 17 years. The average grain moisture on three test fields was below 15 percent. The quality of the grain was excellent, with little or no disease present.

INSECT DAMAGE

The 1953 season was characterized by the greatest upsurge of insect activity in many years. Corn was attacked as soon as it came out of the ground by unprecedented numbers of corn flea beetles. In some areas cutworms, armyworms, and thrips also attacked the young plants. Chinch bugs left grain fields to deposit their eggs in corn fields. Only prompt application of recently developed control measures prevented the greatest chinch bug damage since 1934. About the time that chinch bugs entered corn fields, grasshoppers appeared in scattered areas of the state. Rootworms were of limited importance.

In the northern third of the state, the infestation of corn borer (*Pyrausta nubilalis* (Hbn.)) increased to the point at which it did real damage. At harvest on the Galesburg field, an average of 15.6 percent of the plants were broken above the ear, 13.9 below the ear, and 9.3 percent had dropped their ears (Table 3). Many more ear shanks were so damaged that a mechanical picker would have knocked them to the ground.

For 1954 there are prospects of widespread grasshopper damage. There are also large numbers of chinch bugs in the central and southwestern counties, and heavy corn borer infestation, especially in the north-central counties.

SEED TREATMENT TESTS

Seed-corn treatment is to prevent seedling diseases. Seedling diseases are evident as seedling blights and weak plants.

The 1953 seed-treatment test was conducted with a composite of 3 commonly grown hybrids. The seed, except for fungicidal treatment, was processed by commercial growers and was planted at the rate of 4 kernels to the hill, or 16,000 seeds per acre. There were 10 replications for each treatment for each planting date.

Table 3. — EUROPEAN CORN BORER DAMAGE:
West North-Central Illinois, Galesburg, 1953

Rank	Entry	Plants broken		Ears dropped ^a	Rank	Entry	Plants broken		Ears dropped ^a
		Above ear	Below ear				Above ear	Below ear	
		perct.	perct.	perct.			perct.	perct.	perct.
1	Ainsworth X-13-3.....	12.4	18.8	14.1	41	Morton M-70.....	13.0	19.3	9.9
2	Ainsworth X-21.....	15.4	20.6	8.6	42	Morton M-303.....	12.3	8.2	10.5
3	Ainsworth X-702.....	22.5	8.5	2.8	43	Munson M-5.....	14.0	11.7	7.8
4	Bear OK-20.....	12.2	4.9	7.3	44	Munson M-13.....	15.7	24.1	13.3
5	Bear OK-24.....	12.3	10.6	5.6	45	Munson M-119.....	14.9	19.6	14.9
6	Bear OK-25.....	13.1	8.6	6.3	46	Null N-83.....	7.1	11.6	4.5
7	Crow 402.....	19.4	8.1	5.0	47	P.A.G. 170.....	12.5	17.5	6.3
8	Crow 407.....	15.2	11.0	9.1	48	P.A.G. 303.....	19.8	10.5	5.8
9	Crow 487.....	10.7	12.2	8.4	49	P.A.G. 381.....	12.6	9.8	4.2
10	Crow 608.....	13.1	16.3	5.6	50	P.A.G. 392.....	16.9	15.0	10.6
11	DeKalb 666.....	23.3	12.3	9.8	51	P.A.G. 403.....	21.1	8.2	8.2
12	DeKalb 800A.....	12.9	19.3	11.1	52	Plymouth 37.....	9.9	20.3	11.6
13	DeKalb 816.....	13.4	19.6	10.1	53	Plymouth 38.....	14.9	26.4	13.2
14	DeKalb 847.....	16.4	12.9	8.2	54	Pioneer 301.....	20.7	13.6	8.9
15	DeKalb 850.....	17.2	13.2	7.5	55	Pioneer 313B.....	15.8	26.1	13.6
16	Doubet D-25.....	12.3	9.1	6.5	56	Pioneer 339.....	17.2	11.7	9.8
17	Doubet D-41.....	9.0	19.4	12.3	57	Pioneer 345.....	13.3	14.4	10.5
18	Doubet D-43.....	21.3	14.0	8.5	58	Pioneer 9781.....	13.2	4.6	10.3
19	Funk G-77A.....	17.4	13.0	14.3	59	Producers 525.....	17.1	12.9	6.5
20	Funk G-95.....	17.9	19.2	10.9	60	Producers 717.....	14.9	11.2	5.6
21	Funk G-95A.....	25.2	16.6	4.9	61	Producers 900.....	19.3	19.3	10.8
22	Griffith 129.....	16.0	16.6	21.9	62	Producers 940.....	21.2	15.3	8.2
23	Holmes 19A.....	17.1	10.1	8.2	63	Producers 946.....	13.2	13.8	8.4
24	Holmes 39.....	14.2	17.3	8.0	64	Robe 20.....	19.2	21.9	6.6
25	Huey H-23.....	16.7	20.8	10.7	65	Robe 71.....	19.0	17.9	12.0
26	Huey H-42.....	12.7	13.9	10.9	66	Schwenk S-24.....	14.0	16.9	13.5
27	Huey H-235.....	20.5	13.1	9.7	67	Schwenk S-25.....	18.4	17.1	12.0
28	Hulting 102.....	15.0	8.4	7.2	68	Schwenk S-34.....	17.8	12.2	14.4
29	Hulting 241.....	17.6	2.9	5.3	69	Sieben 320.....	18.7	11.4	4.8
30	Illinois 21 (Dittmer).....	14.5	10.8	7.8	70	Sieben 340.....	15.5	16.1	8.1
31	Illinois 1570 (Station).....	16.9	22.7	12.8	71	Sieben 440E.....	13.7	10.7	7.1
32	Illinois 1813 (Station).....	6.1	5.5	6.6	72	Smiley 8.....	9.4	12.1	6.7
33	Keystone 48.....	16.7	10.3	4.5	73	Stewart S-51.....	15.8	13.3	15.2
34	Lowe 514.....	23.1	18.1	16.3	74	Stewart S-56.....	15.9	9.6	7.0
35	Lowe 520.....	14.9	14.3	6.8	75	Stiegelmeier S-300.....	14.4	5.7	8.6
36	Moews 14L.....	13.6	8.9	12.4	76	Stiegelmeier S-301.....	9.6	7.8	7.8
37	Moews 500.....	18.7	8.4	10.2	77	Tiemann T-61.....	19.3	11.8	11.8
38	Moews 520.....	15.8	15.1	7.9	78	Tiemann T-78.....	15.7	14.0	12.2
39	Moews 524.....	15.0	13.2	7.8	79	Trisler T-19B.....	17.1	5.5	3.4
40	Morton M-12.....	15.8	17.5	8.5	80	U.S. 13 (Stone).....	11.6	21.5	11.0
					81	Whisnand 810.....	16.7	16.1	6.5
						Average of all entries.....	15.6	13.9	9.3
						Differences necessary for significance.....	8.5	7.9	6.9

^a Assuming one ear per plant.

Performance of fungicides. Arasan, Thiran Naugets, and Orthocide 75 all appear to be satisfactory products. The rates of application should be at least $\frac{1}{2}$, $\frac{1}{2}$, and $\frac{3}{4}$ ounce per bushel respectively (Table 4). Somewhat more will at times be beneficial. Ortho Seed Guard and DuPont I & D contain the same fungicides as Orthocide 75 and Arasan respectively, and in addition contain BHC (benzene hexachloride) as a wireworm repellent. These products showed up very well in this year's tests, but

Table 4. — SEED TREATMENT: Increases in Stands and Acre Yields
From Treatment With Chemical Protectants
(Composite test of three hybrids, Urbana, 1953)

Treatment	Rate per bushel	Field stand	Acre yield
Planted May 4, emerged 9 days later			
	oz.	perct.	bu.
None (check).....	...	89.5	92.4
Arasan SF-X ^a	1 1/2	93.4	98.5
Arasan SF-X.....	1	94.3	99.1
Thiram Naugets ^b	1 1/2	93.9	99.6
Thiram Naugets.....	1	95.0	101.0
Phygon-XL-DDT ^c	1 1/2	91.8	94.2
Phygon-XL-DDT.....	1	90.5	97.1
C & C 5400 ^d	1 1/2	93.4	95.7
C & C 5400.....	1	93.0	97.6
Spergon DDT-SL ^e	3/4	93.4	95.4
Spergon DDT-SL.....	1 1/2	93.8	98.4
Orthocide 75 ^f	1 1/2	94.6	96.5
Orthocide 75.....	3/4	94.3	96.2
Ortho Seed Guard ^g	1 1/2	94.1	99.0
Du Pont I & D ^h	1 1/4	95.2	99.2
Difference necessary for significance....	...	2.1	5.1
Planted May 19, emerged 7 days later			
	oz.	perct.	bu.
None (check).....	...	96.7	82.2
Arasan SF-X.....	1 1/2	96.4	86.2
Arasan SF-X.....	1	95.5	86.1
Thiram Naugets.....	1 1/2	97.1	84.6
Thiram Naugets.....	1	95.4	84.3
Phygon-XL-DDT.....	1 1/2	96.6	89.4
Phygon-XL-DDT.....	1	97.5	88.6
C & C 5400.....	1 1/2	97.1	89.2
C & C 5400.....	1	97.1	93.0
Spergon DDT-SL.....	3/4	95.7	86.6
Spergon DDT-SL.....	1 1/2	97.0	88.5
Orthocide 75.....	3/4	96.8	83.4
Orthocide 75.....	1 1/2	96.6	85.4
Ortho Seed Guard.....	1 1/2	98.6	91.6
Du Pont I & D.....	1 1/4	97.7	86.3
Difference necessary for significance....	...	...	7.9

^a Arasan SF-X. Active ingredient 75 percent thiram. E. I. du Pont de Nemours & Co., Wilmington, Delaware. ^b Thiram Naugets. Active ingredient 75 percent thiram. United States Rubber Co., Naugatuck Chemical Division, Naugatuck, Connecticut. ^c Phygon-XL-DDT. Active ingredient 50 percent 2,3-dichloro-1,4 naphthoquinone plus 3 percent DDT. United States Rubber Co., Naugatuck Chemical Division, Naugatuck, Connecticut. ^d C & C 5400 (experimental). Active ingredient 75 percent alpha, alpha-tritliobis. Carbide and Carbon Chemicals Corporation, 30 East 42nd Street, New York 17, New York. ^e Spergon DDT-SL. Active ingredient 92 percent chloranil plus 3 percent DDT. United States Rubber Co., Naugatuck Chemical Division, Naugatuck, Connecticut. ^f Orthocide 75. Active ingredient 75 percent captan. California Spray-Chemical Corporation, Richmond, California, and Elizabeth, New Jersey. ^g Ortho Seed Guard. Active ingredient 50 percent captan plus 16.5 percent gamma BHC from lindane. California Spray-Chemical Corporation, Richmond, California, and Elizabeth, New Jersey. ^h Du Pont I & D. Active ingredient 56 percent thiram plus 14 percent gamma BHC from lindane. E. I. du Pont de Nemours & Co., Wilmington, Delaware.

further testing is needed to determine whether under prolonged storage of treated seed BHC might be injurious.

Unusual results. Since the introduction of Arasan in 1942 in the seed-treatment tests for corn in the Illinois Agricultural Experiment Station, commercially-processed seed treated with a good fungicide always gave significant increases in stand and

yield. In 1953, however, in the second planting stands did not increase though yields did (Table 4). Stands in dry soil were good without seed treatment, but because germination was slow, soil organisms had a chance to weaken the seedlings. Rainfall was good in March but less than half of normal in April and May. At the time of the first planting, moisture was still adequate for good growth; temperatures were so low, however, the plants did not emerge until 9 days after planting. By May 19, the date of the second planting, both soil and air temperature had become so much warmer that with adequate moisture, the plants could have been expected to emerge in 4 days. Because the soil lacked moisture, however, the plants did not emerge for 7 days.

A two-year experiment conducted with dry soil in the Station greenhouse¹ gave results comparable to the 1953 field tests reported above. In this experiment, treated and untreated seed with injured pericarps was used. The study showed that stands from both treated and untreated seed were good, but when growth was retarded by dryness, plants from untreated seed were weak. Treated seed produced much thriftier plants. Weakened plants could be expected to yield less than strong plants. Stands were not affected except after long continued dryness.

DISEASE DAMAGE²

Unusual seedling blight. In early June when plants were 3 to 10 inches tall, many plants having leaves partly to completely blighted were sent to the laboratory. Though the roots were somewhat necrotic, no unusual pathogenic fungi could be found. This blight was first observed about 5 days after temperatures of 90° F. and above started on May 29.

The cause of the blight was believed to be heat damage to the roots. There were three reasons for this belief: (1) the plants were not yet large enough to shade the soil; (2) the temperature of upper, bare soil, especially when somewhat dry, goes considerably above air temperature; and (3) the hot weather became

¹ Koehler, Benjamin. "Corn seedling blight in dry soil." *Phytopathology* 43: 477. 1953.

² Data on disease prevalence and estimates of losses are based in part on surveys made by G. H. Boewe, Assistant Plant Pathologist, Illinois State Natural History Survey.

continuous. This blight was not seen after June 15. By that time the plants shaded the ground better and the roots went deeper.

Stewart's disease. A considerable number of sweet-corn fields were ruined by Stewart's disease during June, even though wilt-resistant hybrids had for the most part been used. As most dent-corn hybrids are highly resistant to early season infection with Stewart's disease, only occasional diseased plants were found. In early August, however, local leaf infection became very prevalent in dent corn. In view of the mild temperatures of the preceding winter though, total damage was not as great as had been anticipated. For the state as a whole, damage to yield was estimated at about 2.8 percent, the highest since 1938.

Much of the leaf firing that became very noticeable in the last days of August was actually caused more by Stewart's disease than by drouth, though the relative importance of disease and drouth varied much with location. At Brownstown in south-central Illinois and much of that territory, drouth caused severe damage. At Urbana in central Illinois, however, premature dying of leaves was in proportion to infection with Stewart's disease.

Because of conditions on the Urbana field, results of tests of inbreds for resistance to Stewart's disease were excellent. The prevalence of the disease here was higher than the average for the state. Other leaf blight diseases which often confuse the readings were unusually absent. Stalk rot is usually promoted by leaf blight and causes the plants to die prematurely. Stalk rots, however, gave little trouble in 1953, for dry weather is not in general favorable to them.

Between inbreds, differences in resistance to Stewart's disease were striking (Table 5). Correlation between the rating for damage by Stewart's disease and either days to half silk or days to maturity was significant at the 5-percent level at any of the three dates given (Table 5).

A number of exceptions to this general trend occurred, however. The ratings for Stewart's disease given in black-face type (Table 5) indicate the ratings when the plants were more nearly in comparable stages of development. When these ratings were used, correlations between Stewart's disease and days to half silk were no longer significant. In the earlier-maturing group Ohio 45 was comparatively outstanding. Nebraska N6 started

Table 5.—REACTION OF CERTAIN INBRED LINES OF CORN TO STEWART'S DISEASE: Central Illinois, Urbana, 1953

(Cause: *Bacterium stewartii*. Ratings are based on a score of 0 to 5.^a Average of three replications.)

Inbred	Days to half silk ^b	Days to maturity ^b	Rating for leaves dead, due primarily to Stewart's disease		
			Aug. 20	Aug. 28	Sept. 4 ^c
Iowa 1205.....	71	117	2.3	2.7	3.5
Ohio 51A.....	74	124	1.5	3.2	5.0
Ohio 43.....	74	126	2.3	3.8	4.5
Ohio 45.....	74	127	1.5	1.7	2.7
Iowa Os420.....	75	124	3.5	4.0	5.0
Kansas K41(W) ^d	75	125	2.5	3.3	4.5
Nebraska N6.....	76	122	.5	1.7	4.0
Indiana WF9.....	76	128	2.0	2.3	4.0
Nebraska N1.....	76	129	2.0	2.5	3.7
Iowa L289.....	77	122	3.2	4.5	5.0
Illinois M14.....	77	124	2.2	3.8	5.0
U.S. CI. 187-2.....	77	126	1.8	3.0	4.7
Wisconsin W22.....	77	127	2.3	2.8	4.5
Illinois Hy2.....	77	129	1.7	2.0	3.0
Illinois R4.....	78	123	2.2	2.8	5.0
Illinois 90.....	78	126	2.0	2.2	3.7
Kentucky 27(W) ^d	79	126	1.2	1.5	2.2
Indiana 33-16(W) ^d	79	128	.5	.9	1.6
Kansas K55(W) ^d	79	135	1.8	2.1	3.4
Illinois R61.....	80	127	3.2	3.5	4.3
Missouri G.....	81	126	1.3	1.5	3.2
U.S. CI. 21E.....	81	132	.8	1.2	1.7
Connecticut C103.....	81	133	.4	.9	2.0
Indiana P8.....	81	134	2.3	2.7	4.2
Ohio 29.....	82	132	1.8	2.0	3.0
Indiana 38-11.....	82	132	2.5	3.2	3.5
Illinois 5120B.....	83	131	2.3	2.7	3.7
Kansas K155.....	83	134	.7	1.0	2.0
Ohio 7.....	83	135	1.7	1.8	3.0
Iowa L317.....	85	127	1.7	2.8	3.7
Kansas K201C.....	85	144	.3	.7	1.0
Kansas K4.....	86	147	1.2	1.5	2.7
Least significant difference.....	..	...	.7	.8	1.0

^a A score of 5 indicates that nearly all the leaf area was dead.^b Data obtained from committee on testing inbred lines, 1948-1949, North Central Corn Improvement Conference.^c Due to the effect of drouth, the rating of early hybrids at this date is probably a little too high.^d (W) indicates white inbreds; all others are yellow.

out excellently; whether Stewart's disease alone was responsible for its later failure or whether other factors also contributed to it is not known. Connecticut C103 and Kansas K201C showed not only good resistance to Stewart's disease, but in previous years have shown superior resistance to northern leaf blight (*Helminthosporium*).

Correlations between Stewart's disease and northern leaf blight indicate considerable relationship between resistance to these two diseases. In 1951 certain inbreds were tested for resistance to northern leaf blight. Twenty-six of the same inbreds were tested for resistance to Stewart's disease in 1953. When the figures given for August 20, 1953 (Table 5) were used, the correlation coefficient between resistance to northern leaf blight

and Stewart's disease was .578, a highly significant figure. When the figures given in black-face type for August 20 and 28, 1953, were used, the correlation was .421, significant at the 5-percent level.

Two hybrids, however, proved to be outstanding exceptions. The resistance of Ohio 43 to northern leaf blight was high, but its resistance to Stewart's disease low. The resistance of Nebraska N6 to northern leaf blight was low, but its resistance to Stewart's disease was better.

For commercial hybrids, reliable tests for resistance to Stewart's disease could be obtained only at Urbana. Hybrids were rated September 1 and 2 by using estimates of the extent of leaf area killed by Stewart's disease. A score of 5 indicates leaves were almost entirely dead. Not only were all replications rated, but each plot was rated independently from each end; this method provided 10 observations for each entry. The average differences in ratings were not wide but, when analyzed statistically, were nevertheless highly significant (Table 8).

Northern leaf blight. Only traces of northern leaf blight (*Helminthosporium turcicum*) were found in some test fields and none in others. To flourish northern leaf blight requires high humidities during part of the growing season.

Ear rots. Damage from ear rots, especially by *Fusarium moniliforme*, caused concern in some areas. But on the whole damage from ear rots was lower than it has been for several years.

Smut. Common smut was considerably more prevalent than usual. For the state as a whole, smut was estimated to have cut yield 1.7 percent. This is the highest loss since 1940 when damage was 4 percent.

Stalk rot. Dry weather kept the usual stalk rot diseases in check in many parts of the state. As usual, some severe occurrences caused much lodging. This year these occurrences appeared primarily in the northern part of the state. The chief causes were *Diplodia zeae* and *Gibberella zeae*, the former usually being somewhat predominant. In the hot, dry areas, which included most of the lower two-thirds of the state, charcoal rot was more abundant than it has been for many years. In a field in Bond county 60 percent of the stalks were affected. This di-

sease was found to some extent as far north as Livingston county. Bacterial-pythium stalk rot occurred sporadically. One of the worst cases ever observed in Illinois was recorded in Massac county. Damage occurred as far north as Coles county.

Of the five 1953 corn tests, premature dying of plants that could be attributed to stalk rot occurred only on the Galesburg and Ridgway fields. Wide differences in susceptibility between hybrids appeared on each field, as Table 7, page 18, and Table 10, page 24, show. The trend was for stalk rots to reduce yields. The correlation between susceptibility and yield was significant at the 1-percent level in each test.

MEASURING PERFORMANCE

The entries in the 1953 test are listed in the tables in alphabetical order. It is hoped this arrangement will reduce the emphasis often placed on yield alone.

Yield of grain. To determine shelling percentage, all the ears from one replicate of each entry were shelled immediately after harvest. From the well-mixed shelled corn one sample was taken to determine the percentage of moisture at harvest.¹

The total acre-yield was calculated as shelled corn containing 15.5 percent moisture, the upper limit allowable in No. 2 corn. The total yield thus obtained for three fields (Galesburg, Urbana, and Browns-town) was adjusted according to the procedure outlined by Cochran for randomized lattice-square designs.²

Erect plants. The percentage of erect plants in each plot of each entry on each field was estimated at the time of harvest. Lodging may have been due to rootworm damage, weak or rotted roots, corn borer damage, stalk rots, or weak stalks. Stalks broken above the ear were not considered lodged.

Height of ear. Notes on comparative height of ear were taken at harvest time. Each lot of each entry was placed in one of the five following categories: *low*, *mid-low* (midway between low and medium), *medium*, *mid-high* (midway between medium and high), and *high*. Beginning with *low* and continuing progressively to *high*, these terms were assigned numerical values from 1 to 5 to permit the averaging of the plots.

¹ All moisture determinations were made with a Steinlite moisture tester.

² Cochran, W. G. "Some Additional Lattice-Square Designs." *Iowa Agr. Exp. Sta. Res. Bul. 318*. May, 1943.

Stand. A count was made in late summer, at all fields, of the number of missing hills and total number of missing plants in each plot of each variety. It is assumed that missing hills were due to some factor other than the hybrid itself. Yields were corrected for missing hills by the following adjustment:

$$\text{Ear weight in field} \times \left(1 + \frac{\text{missing hills}}{\text{hills present}} \times .6 \right) = \text{adjusted ear weight.}$$

The percent stand is based on the total number of missing plants in relation to the number that would have been present if all the kernels had produced plants. Stand differences may be due to poor germination, to disease, insect, or rodent destruction, or in some cases to destruction in cultivation.

Readers are urged to keep in mind these two things when comparing the performance of hybrids on any one field:

1. Small differences in any one year do not necessarily indicate that one hybrid is inherently superior to another. For the amount one hybrid must outyield another before it can be considered better, see the difference-necessary-for-significance figures given at the bottom of these tables. Significance was calculated at the 5-percent level.

2. Tests covering three years (see upper part of yield tables) give more reliable results than those covering only one year. The fact that a hybrid does not appear in the summary is, however, nothing against it — its absence merely means that 1953 was the first year it was tested or that it missed one year of the series.

PEDIGREES OF 20 HYBRIDS

Following is a list of open-pedigree hybrids whose performance is shown in this bulletin.

A.E.S. 702... (C103×M14) (Hy2×WF9)	Ill. 1289..... (M14×W22) (WF9×I.205)
A.E.S. 805... (C103×Oh45) (WF9×38-11)	Ill. 1459..... (38-11×K4) (K201×Cl.21E)
Ill. 21..... (Hy2×187-2) (WF9×38-11)	Ill. 1570..... (Hy2×Oh41) (WF9×38-11)
Ill. 101..... (M14×WF9) (187-2×W26)	Ill. 1656..... (C10-3×Hy2) (WF9×38-11)
Ill. 1091A... (Hy2×187-2) (M14×WF9)	Ill. 1800..... (M14×WF9) (A73×A295)
Ill. 1180.... (M14×WF9) (W8×W32)	Ill. 1813..... (C103×Oh45) (Hy2×WF9)
Ill. 1246.... (R61×187-2) (WF9×38-11)	Ill. 1851..... (C103×38-11) (Oh7×Cl.21E)
Ill. 1277.... (M14×WF9) (I.205×187-2)	Ill. 2119(W)... (33-16×K64) (Ky27×Cl.61)
Ill. 1279.... (M14×WF9) (A375×187-2)	Ill. 2214(W)... (R30×Ky27) (H21×K64)
Ill. 1280.... (M14×WF9) (Os420×187-2)	U.S. 13..... (Hy×L317) (WF9×38-11)

CONTRIBUTORS OF SEED

Ainsworth Hybrids.....	Ainsworth Seed Co.....	Mason City
Appl Hybrids.....	Appl's Hybrid Seed Co.....	St. Joseph
Bear Hybrids.....	Bear Hybrid Corn Co.....	Decatur, Box 628
Canterbury Hybrids.....	C. E. Canterbury Seed Co.....	Cantrall
Crow Hybrids.....	Crow's Hybrid Corn Co.....	Milford
DeKalb Hybrids.....	DeKalb Agricultural Assn.....	DeKalb
Doubet Hybrids.....	E. W. Doubet.....	Hanna City
Embro Hybrids.....	Ed. F. Mangelsdorf & Bro., Inc.....	1020 S. 4th St., St. Louis, Mo.
Frey Hybrids.....	Frey Hybrid Corn Co.....	Gilman
Funk Hybrids.....	Funk Brothers Seed Co.....	Bloomington
Griffith Hybrids.....	Griffith Seed Co.....	Bloomington
Haudrich Hybrids.....	Haudrich Hybrid Corn Co.....	Belleville
Holmes Hybrids.....	Holmes Hybrids.....	Edelstein
Huebsch Hybrids.....	L. A. Huebsch & Son.....	Mundelein
Huey Hybrids.....	Huey Seed Co.....	Carthage
Hulting Hybrids.....	G. E. Hulting & Son.....	Geneseo
Illinois Hybrids.....	Ill. 21 (Dittmer Seeds, Carthage; Mountjoy Hybrid Seed Co.)	
	Ill. 101 (L. A. Huebsch & Son)	
	Ill. 1091A (Dittmer)	
	Ill. 1180 (L. A. Huebsch)	
	Ill. 1246 (Mountjoy Hybrid Seed Co.)	
	Ill. 1249 (Ill. Agr. Exp. Sta.)	
	Ill. 1277 (L. A. Huebsch & Son)	
	Ill. 1279, 1280, 1289, 1459 (Ill. Agr. Exp. Sta.)	
	Ill. 1570 (H. E. Huey & Son) (R. G. Stone, Pleasant Plains)	
	Ill. 1656 (Mountjoy Hybrid Seed Co.)	
	Ill. 1800, 1813, 1851 (Ill. Agr. Exp. Sta.)	
	Ill. 2119(W) (Lovell Bros., Henshaw, Ky.)	
	Ill. 2214(W) (Ill. Agr. Exp. Sta.)	
Keystone Hybrids.....	Corneli Seed Co.....	101 Chouteau Ave., St. Louis, Mo.
Lovell Hybrids.....	Lovell Seed Co.....	Henshaw, Ky.
Lowe Hybrids.....	Lowe Seed Co.....	Aroma Park
Moews Corn Belt Hybrids.....	Moews Corn Belt Co., Inc.....	Boswell, Ind.
Moews Hybrids.....	Moews Seed Co.....	Granville
Morton Hybrids.....	Roy A. Morton & Sons.....	Bowen
Mountjoy Hybrids.....	Mountjoy Hybrid Seed Co.....	Atlanta
Munson Hybrids.....	Carl Munson.....	Galesburg
Nichols Hybrids.....	Nichols Bros.....	Hebron
Null Hybrids.....	Null Seed Farms.....	Colchester
P.A.G. Hybrids.....	Pfister Assoc. Growers, Inc.....	Aurora
Pioneer Hybrids.....	Pioneer Hi-Bred Corn Co. of Ill.....	Princeton
Plymouth Hybrids.....	Howard E. Huey & Son.....	Camp Point
Producers Hybrids.....	Producers Seed Co.....	Piper City
Robe Hybrids.....	Robe Hybrid Corn Co.....	Smithshire
Schwenk Hybrids.....	W. T. Schwenk & Sons.....	Edwards
Sieben Hybrids.....	Sieben Hybrids.....	Geneseo
Smiley Hybrids.....	Glenn Smiley.....	Milford
Stewart Hybrids.....	Frank S. Stewart.....	Princeville
Stiegelmeier Hybrids.....	H. L. Stiegelmeier.....	Normal
Super-Crost Hybrids.....	E. J. Funk & Sons.....	Kentland, Ind.
Tiemann Hybrids.....	Tiemann Seed Co.....	Bloomington
Trisler Hybrids.....	J. L. Trisler.....	Fairmount
U.S. Hybrids.....	U.S. 13 (H. E. Huey & Son; R. G. Stone)	
Whisnand Hybrids.....	Myron Whisnand.....	Arcola

Table 6. — NORTHERN ILLINOIS: DeKalb

Entry	Total acre yield	Moisture in grain at harvest	Erect plants	Stand	Height of ear
SUMMARY 1951-1953: Less than 6.4 bushels difference between total yields of any two entries is not significant.					
	<i>bu.</i>	<i>perct.</i>	<i>perct.</i>	<i>perct.</i>	
Illinois 1277 ^a	100.8	22.1	97	92	Medium
Bear OK-111.....	100.0	24.0	97	94	M-low
Illinois 1091A ^b	98.7	24.4	97	88	M-high
Pioneer 347.....	98.3	21.8	98	91	Medium
Pioneer 325.....	98.3	23.8	99	93	M-low
Illinois 1280 ^c	98.1	22.3	97	91	Medium
Pioneer 337.....	96.6	21.6	98	91	Medium
DeKalb 406.....	96.2	21.4	97	91	Medium
P.A.G. 277.....	95.5	23.7	96	86	Medium
Ainsworth X-12.....	95.2	23.2	98	88	M-low
Funk G-77A.....	94.7	21.6	96	91	M-high
Holmes 11A.....	93.5	22.1	96	90	Medium
Funk G-16A.....	93.5	22.5	98	86	Medium
Illinois 1289 (Station).....	93.5	23.9	98	89	M-low
Illinois 101 ^d	93.1	23.2	97	93	Medium
Sieben S-450.....	92.9	21.1	95	91	Medium
Keystone 44.....	92.6	22.5	98	89	M-low
DeKalb 408.....	91.9	22.8	95	89	Medium
Sieben S-340.....	91.6	26.5	97	95	High
Frey 425.....	91.3	23.4	97	88	M-high
Tiemann T-61.....	91.0	22.7	98	92	Medium
Niehols 5B.....	88.2	22.6	96	92	Medium
Sieben S-440E.....	87.7	24.0	98	89	Medium
DeKalb 404A.....	87.6	21.8	96	89	M-low
Crow 260.....	86.1	22.4	98	85	Medium
Crow 432.....	85.3	23.0	98	88	M-low
Mountjoy M-42.....	85.2	23.8	97	89	Medium
Keystone 32.....	83.5	23.8	95	87	Medium
Average of all entries.....	92.9	22.9	97	90	.....
1953 RESULTS: Less than 13.2 bushels difference between total yields of any two entries is not significant.					
A.E.S. 702 (Station).....	111.0	16.0	98	95	High
Ainsworth X-12.....	106.1	16.0	99	83	M-low
Bear OK-28.....	108.9	14.7	99	81	Medium
Bear OK-411.....	103.5	18.3	98	87	Low
Crow 260.....	100.8	14.8	99	81	M-low
Crow 402.....	107.0	16.2	98	83	Low
Crow 432.....	93.1	19.1	99	83	M-low
Crow 487.....	88.5	15.2	98	64	Low
DeKalb 404A.....	91.7	15.2	97	79	Low
DeKalb 406.....	104.7	15.3	99	85	M-low
DeKalb 408.....	104.3	15.3	98	80	M-low
DeKalb 455.....	101.1	14.4	97	81	M-high
DeKalb 458.....	93.6	17.6	98	77	Medium
Doubet D-25.....	97.9	19.1	99	79	High
Doubet D-45.....	87.8	17.3	99	74	M-low
Frey 410.....	100.6	15.2	99	79	M-low
Frey 425.....	98.4	16.1	99	79	Medium
Funk G-16A.....	104.1	14.3	99	74	Medium
Funk G-77A.....	100.7	15.7	98	86	High
Holmes 11A.....	104.7	16.0	99	81	Medium
Holmes 17.....	110.6	17.5	99	83	Medium
Holmes 19A.....	103.6	17.4	99	78	Medium
Huebseh H-24.....	103.3	15.3	98	85	Low

^a Average of Illinois 1277 (Station), 1951, 1952, and Illinois 1277 (Huebseh), 1953.^b Average of Illinois 1091A (Station), 1951, and Illinois 1091A (Dittner), 1952, 1953.^c Average of Illinois 1280 (Joslin), 1951, and Illinois 1280 (Station), 1952, 1953.^d Average of Illinois 101 (Station), 1951, and Illinois 101 (Huebseh), 1952, 1953.

(Table is concluded on next page)

Table 6. — NORTHERN ILLINOIS: DeKalb — concluded

Entry	Total acre yield	Moisture in grain at harvest	Erect plants	Stand	Height of ear
1953 RESULTS — concluded					
	<i>bu.</i>	<i>perct.</i>	<i>perct.</i>	<i>perct.</i>	
Huebsch H-81.....	107.1	16.6	97	90	M-low
Hulting 238.....	115.3	16.7	99	91	Low
Hulting 240.....	113.8	14.8	99	90	Medium
Hulting 241.....	101.8	14.8	99	90	M-low
Illinois 101 (Huebsch).....	112.7	16.1	99	93	Medium
Illinois 1091A (Dittmer).....	118.6	18.8	99	82	M-high
Illinois 1180 (Huebsch).....	97.7	16.9	98	87	M-low
Illinois 1277 (Huebsch).....	105.5	16.5	98	88	M-low
Illinois 1279 (Station).....	108.8	15.6	98	90	M-low
Illinois 1280 (Station).....	110.0	14.4	99	85	M-low
Illinois 1289 (Station).....	102.8	14.9	98	76	Low
Illinois 1800 (Station).....	100.8	14.9	99	82	M-low
Keystone 32.....	97.1	18.4	97	82	M-high
Keystone 44.....	96.2	14.3	99	80	M-low
Lowe 315.....	103.0	13.9	98	79	Medium
Lowe 322.....	79.8	16.0	98	76	M-low
Lowe 377.....	78.9	16.2	98	71	M-low
Moews 14E.....	93.7	13.1	98	90	M-low
Moews 14.....	95.3	14.1	99	72	M-low
Moews 80.....	85.7	14.7	98	82	Low
Moews 85.....	89.6	13.9	98	84	Low
Moews 86.....	92.5	14.0	99	83	Low
Mountjoy M-42.....	95.4	16.3	99	81	Medium
Munson M-5.....	111.8	16.7	99	90	Medium
Munson M-77.....	112.4	18.0	99	85	High
Nichols 5A.....	100.3	17.5	99	78	M-high
Nichols 5B.....	103.2	15.3	98	91	Medium
Nichols 51.....	98.9	15.7	98	80	M-low
Nichols 75A.....	107.8	17.9	98	90	Medium
P.A.G. 233.....	92.6	16.7	98	80	M-high
P.A.G. 234.....	111.2	16.0	99	80	Medium
P.A.G. 244.....	109.0	15.0	99	87	M-low
P.A.G. 277.....	106.2	16.2	99	74	Medium
P.A.G. 297.....	97.8	15.3	98	86	Low
Pioneer 325.....	104.1	18.1	99	87	Low
Pioneer 337.....	104.8	15.3	99	88	Medium
Pioneer 346.....	104.4	15.2	97	85	Medium
Pioneer 347.....	108.4	15.8	99	86	M-low
Pioneer 352.....	93.5	17.5	99	84	Low
Producers 305.....	77.7	15.3	97	68	Low
Producers 311.....	97.4	19.0	99	78	Medium
Producers 314.....	94.5	14.9	98	72	Low
Producers 315.....	100.3	16.0	97	83	M-low
Producers 510.....	108.4	14.3	99	83	High
Sieben S-340.....	104.4	20.6	98	94	High
Sieben S-440E.....	100.2	15.0	99	84	M-low
Sieben S-450.....	102.1	15.2	98	85	M-high
Sieben S-560.....	94.9	15.3	99	72	Medium
Sniley E-4.....	102.9	15.2	99	80	M-high
Stiegelmeier S-379.....	111.8	13.6	99	90	M-low
Tiemann T-61.....	106.5	17.3	99	91	Medium
Tiemann T-78.....	111.0	14.5	99	85	High
Average of all entries.....	101.4	15.9	98	83	.....

Table 7. — WEST NORTH-CENTRAL ILLINOIS: Galesburg

Entry	Total acre yield	Moisture in grain at harvest	Erect plants	Stand	Height of ear	Stalk rot damage ^a
SUMMARY 1951-1953: Less than 5.9 bushels difference between total yields of any two entries is not significant.						
	<i>bu.</i>	<i>perct.</i>	<i>perct.</i>	<i>perct.</i>		<i>perct.</i>
Holmes 39.....	109.8	20.6	85	89	M-high	....
Ainsworth X-21.....	109.1	18.4	87	92	M-high	....
Pioneer 313B.....	107.8	21.6	73	94	M-high	....
DeKalb 800A.....	107.7	18.3	87	90	M-high	....
Illinois 1570 (Station).....	107.4	19.4	83	90	M-high	....
Pioneer 301.....	107.4	19.3	85	94	M-low	....
Schwenk S-24.....	107.3	19.3	84	93	M-high	....
Schwenk S-34.....	107.2	19.7	90	94	M-high	....
Illinois 21 (Dittmer).....	105.3	18.6	89	91	M-high	....
Plymouth 38.....	105.2	19.4	84	90	High	....
Munson M-13.....	105.0	19.0	86	91	M-high	....
Doubet D-43.....	103.8	19.4	91	89	M-high	....
Huey H-23.....	103.3	19.0	85	91	Medium	....
Stewart S-51.....	103.2	20.7	90	93	High	....
Ainsworth X-13-3.....	102.4	20.7	85	91	High	....
Morton M-12.....	102.2	19.7	86	90	M-high	....
Morton M-70.....	102.0	20.5	86	92	M-high	....
Munson M-5.....	101.8	19.1	84	89	M-low	....
U.S. 13 ^b	101.6	21.4	82	94	High	....
Holmes 19A.....	101.5	19.5	85	89	Medium	....
P.A.G. 392.....	101.4	17.1	87	86	Medium	....
Sieben S-340.....	99.9	17.6	87	92	Medium	....
P.A.G. 170.....	99.6	19.1	85	87	Medium	....
Lowe 514.....	98.2	19.5	85	89	Medium	....
Funk G-77A.....	98.0	17.9	88	88	Medium	....
Keystone 48.....	97.1	18.6	84	89	M-low	....
Huey H-42.....	96.9	19.0	86	89	M-high	....
Lowe 520.....	96.0	18.8	93	89	M-high	....
Tiemann T-61.....	91.1	19.3	85	92	Low	....
Average of all entries.....	102.7	19.3	86	91	.....	....
1953 RESULTS: Less than 11.0 bushels difference between total yields of any two entries is not significant.						
Ainsworth X-13-3.....	91.7	18.7	67	89	High	6.8
Ainsworth X-21.....	93.9	13.0	69	92	M-high	6.1
Ainsworth X-702.....	96.6	12.7	88	76	M-low	5.4
Bear OK-20.....	97.8	12.6	81	82	M-low	11.7
Bear OK-24.....	103.9	15.7	69	93	Low	7.1
Bear OK-25.....	93.4	18.0	79	91	M-low	4.9
Crow 402.....	93.2	14.8	69	87	Low	18.9
Crow 407.....	98.7	13.4	75	88	Low	48.1
Crow 487.....	83.8	12.6	83	70	Low	27.1
Crow 608.....	94.3	13.6	76	84	M-high	6.0
DeKalb 666.....	85.2	16.2	71	85	Medium	14.4
DeKalb 800A.....	96.6	13.4	74	84	M-high	4.4
DeKalb 816.....	87.2	14.5	71	93	M-high	3.2
DeKalb 847.....	85.8	16.4	70	89	M-high	6.2
DeKalb 850.....	82.0	13.3	80	92	M-low	14.9
Doubet D-25.....	101.0	12.5	82	85	Medium	2.9
Doubet D-41.....	88.6	13.5	71	84	High	9.0
Doubet D-43.....	94.2	15.3	82	87	M-low	2.3
Funk G-77A.....	86.8	13.4	74	87	Medium	7.0
Funk G-95.....	94.8	13.5	69	82	Medium	4.2
Funk G-95A.....	89.4	14.8	74	87	Medium	5.7

^a As determined by examining base of each stalk on September 18.^b Average of U.S. 13 (Station), 1951, U.S. 13 (Morton), 1952, and U.S. 13 (Stone), 1953.

(Table is concluded on next page)

Table 7.—WEST NORTH-CENTRAL ILLINOIS:
Galesburg — concluded

Entry	Total acre yield	Moisture in grain at harvest	Erect plants	Stand	Height of ear	Stalk rot damage ^a
1953 RESULTS — concluded						
	bu.	perct.	perct.	perct.		perct.
Griffith 129.....	101.2	16.1	59	95	M-high	4.8
Holmes 19A.....	90.6	14.5	73	84	Low	13.8
Holmes 39.....	101.5	15.2	71	85	M-high	12.9
Huey H-23.....	93.5	12.5	68	87	Medium	4.0
Huey H-42.....	83.1	14.5	74	88	M-high	7.6
Huey H-235.....	86.9	16.6	78	92	M-low	5.5
Hulting 102.....	86.1	12.5	83	88	Low	13.7
Hulting 241.....	93.8	12.1	83	88	Low	15.7
Illinois 21 (Dittmer).....	90.9	13.5	78	89	M-high	4.5
Illinois 1570 (Station).....	103.5	14.0	63	89	Medium	7.7
Illinois 1813 (Station).....	103.5	14.9	91	92	M-high	.5
Keystone 48.....	93.1	13.9	77	85	M-low	9.8
Lowe 514.....	84.6	14.5	69	85	M-low	8.9
Lowe 520.....	89.7	13.6	87	83	M-high	5.5
Moews 14L.....	80.3	12.9	75	85	Medium	20.4
Moews 500.....	79.0	13.5	77	87	M-low	24.0
Moews 520.....	88.1	12.7	84	78	Medium	4.2
Moews 524.....	90.8	16.1	85	87	M-high	1.6
Morton M-12.....	85.3	14.8	76	90	M-high	4.9
Morton M-70.....	93.8	16.0	68	97	M-high	7.7
Morton M-303.....	99.2	13.8	83	90	M-low	6.2
Munson M-5.....	101.7	13.1	66	89	M-low	17.0
Munson M-13.....	95.2	12.9	68	89	Medium	7.7
Munson M-119.....	98.9	13.8	73	91	High	6.9
Null N-83.....	97.0	13.9	79	80	Medium	7.4
P.A.G. 170.....	98.4	14.4	69	89	Medium	9.1
P.A.G. 303.....	95.5	14.7	77	91	Low	14.5
P.A.G. 381.....	102.3	13.8	87	76	Medium	2.8
P.A.G. 392.....	93.8	12.7	78	77	Medium	9.7
P.A.G. 403.....	89.8	14.5	91	89	M-low	3.8
Plymouth 37.....	99.4	15.3	59	88	M-high	4.6
Plymouth 38.....	96.6	13.3	61	91	High	6.2
Pioneer 301.....	95.4	15.7	66	90	M-low	5.5
Pioneer 313B.....	94.0	14.5	45	94	Medium	21.4
Pioneer 339.....	84.8	13.5	72	84	Medium	18.4
Pioneer 345.....	100.3	12.6	71	92	M-low	11.1
Pioneer 9781.....	79.4	13.9	83	91	M-low	10.3
Producers 525.....	91.2	14.3	72	86	M-low	6.2
Producers 717.....	88.4	13.8	80	85	Low	7.2
Producers 900.....	101.7	13.8	74	89	Medium	3.4
Producers 940.....	93.2	13.8	78	91	M-high	2.8
Producers 946.....	84.4	17.5	72	90	M-high	.6
Robe 20.....	98.5	14.5	83	82	M-high	2.4
Robe 71.....	96.7	15.1	66	94	M-high	8.6
Schwenk S-24.....	96.1	14.2	69	91	M-high	7.4
Schwenk S-25.....	92.0	13.2	75	86	M-high	5.4
Schwenk S-34.....	97.8	14.5	81	91	M-high	5.0
Sieben 320.....	90.3	14.9	77	88	M-low	10.1
Sieben 340.....	89.6	12.9	73	85	M-low	14.0
Sieben 440E.....	87.0	12.6	70	88	Low	32.4
Smiley 8.....	98.6	15.6	61	85	M-low	8.7
Stewart S-51.....	95.0	14.7	79	87	High	7.5
Stewart S-56.....	88.2	13.5	87	81	Medium	8.2
Stiegelmeier S-300.....	79.9	16.0	90	90	Medium	8.0
Stiegelmeier S-301.....	97.3	16.5	85	84	M-low	.5
Tiemann T-61.....	85.5	14.9	64	88	Low	24.2
Tiemann T-78.....	94.6	15.2	74	89	Medium	6.9
Trisler T-19B.....	89.8	13.8	85	79	M-low	12.3
U.S. 13 (Stone).....	94.1	13.5	63	95	High	6.2
Whisnand 810.....	97.3	15.1	65	94	M-high	4.3
Average of all entries.....	92.7	14.3	75	87	.....	9.2

^a As determined by examining base of each stalk on September 18.

Table 8. — CENTRAL ILLINOIS: Urbana 1952, 1953; Sullivan 1951

Entry	Total acre yield	Moisture in grain at harvest	Erect plants	Stand	Height of ear	Stewart's Disease rating ^a
SUMMARY 1951-1953: Less than 5.2 bushels difference between total yields of any two entries is not significant.						
	<i>bu.</i>	<i>perct.</i>	<i>perct.</i>	<i>perct.</i>		
Pioneer 302.....	110.5	19.9	83	95	M-high	...
Canterbury 400.....	109.5	16.5	85	93	M-high	...
Doubet D-43.....	108.9	17.6	90	95	Medium	...
Funk G-91.....	108.9	17.5	87	91	M-high	...
U.S. 13 ^b	107.7	16.5	81	92	M-high	...
Pioneer 301.....	107.6	15.9	82	90	Low	...
Morton M-70.....	107.4	17.5	82	95	Medium	...
Pioneer 313B.....	107.0	17.8	77	94	Medium	...
Ainsworth X-14-3.....	106.2	16.6	79	91	M-high	...
Munson M-13.....	106.0	16.7	80	91	M-high	...
Whisnand 810.....	106.0	17.6	89	92	M-high	...
P.A.G. 173.....	105.8	16.9	84	90	M-high	...
Ainsworth X-13-3.....	105.6	17.7	81	93	High	...
Illinois 1570 (Stone).....	105.1	16.8	84	94	M-high	...
Canterbury 404.....	103.8	16.5	76	92	Medium	...
Canterbury 420.....	103.4	17.1	87	93	M-high	...
Crow 608.....	103.4	16.0	83	90	Medium	...
Illinois 21 ^c	103.3	16.4	80	92	Medium	...
Morton M-12.....	103.1	17.3	77	93	M-high	...
Whisnand 804.....	102.7	18.4	87	92	M-high	...
Tiemann T-72.....	101.7	16.3	86	92	Medium	...
Doubet D-41.....	101.4	17.1	87	86	High	...
Lowe 523.....	101.3	16.7	77	95	Medium	...
Trisler T-32.....	99.8	16.8	82	87	Medium	...
P.A.G. 392.....	99.3	16.2	81	88	Medium	...
DeKalb 875.....	98.6	18.0	81	94	Medium	...
P.A.G. 170.....	98.5	17.1	76	88	Medium	...
Trisler T-19B.....	97.2	16.4	70	90	M-low	...
Lowe 520.....	95.5	17.0	79	91	Medium	...
Average of all entries.....	104.0	17.1	82	92	.....	...
1953 RESULTS: Less than 10.6 bushels difference between total yields of any two entries is not significant.						
A.E.S. 805 (Stone).....	100.8	11.5	96	95	M-low	2.5
Ainsworth X-13-3.....	106.0	12.6	88	94	High	3.0
Ainsworth X-14-3.....	106.6	10.2	91	92	M-high	3.0
Appl 130.....	105.4	10.5	94	92	High	2.6
Appl 159.....	103.6	14.0	92	94	High	3.0
Bear OK-25.....	104.0	11.1	93	89	Low	3.0
Bear OK-50.....	100.2	11.6	90	91	Medium	2.9
Bear OK-60.....	110.9	17.4	96	97	M-high	2.1
Bear OK-72.....	114.5	12.6	96	96	Low	2.5
Canterbury 400.....	114.7	10.6	97	99	M-high	2.7
Canterbury 404.....	103.3	10.3	93	96	Medium	3.2
Canterbury 420.....	107.3	11.9	93	95	M-high	2.8
Crow 608.....	99.2	10.3	97	88	Medium	3.1
Crow 638.....	100.5	10.1	98	90	M-low	3.3
Crow 825.....	101.2	11.0	99	83	Medium	2.4
DeKalb 628A.....	91.4	10.6	95	89	Medium	3.3
DeKalb 800A.....	101.3	11.3	89	94	High	3.0
DeKalb 847.....	97.8	9.9	95	94	M-high	3.3
DeKalb 850.....	94.9	10.4	97	92	Medium	3.1
DeKalb 875.....	93.9	12.9	94	93	M-high	2.8
Doubet D-25.....	89.9	11.3	97	93	M-low	2.7
Doubet D-41.....	94.2	10.7	93	80	High	2.5
Doubet D-43.....	101.7	12.6	97	96	Medium	2.7

^a The scale used was 0 to 5, the higher rating indicating the greater damage.^b Average of U.S. 13 (Station) 1951, U.S. 13 (Morton) 1952, and U.S. 13 (Stone) 1953.^c Average of Illinois 21 (Stone) 1951, 1952, and Illinois 21 (Mountjoy) 1953.

(Table is concluded on next page)

Table 8. — CENTRAL ILLINOIS: Urbana — concluded

Entry	Total acre yield	Moisture in grain at harvest	Erect plants	Stand	Height of ear	Stewart's Disease rating ^a
1953 RESULTS — concluded						
	<i>bu.</i>	<i>perct.</i>	<i>perct.</i>	<i>perct.</i>		
Frey 645.....	103.9	10.4	85	96	M-high	3.1
Frey 692.....	100.2	11.3	95	89	Medium	3.0
Frey 892.....	111.6	11.5	96	91	Medium	2.9
Funk G-77A.....	93.3	9.9	97	82	M-low	3.7
Funk G-91.....	107.5	10.6	95	85	M-high	2.7
Funk G-95.....	109.1	10.2	91	87	Medium	3.1
Funk G-95A.....	100.5	11.1	97	93	M-low	2.9
Holmes 13.....	108.1	12.0	95	97	M-high	2.9
Holmes 39.....	108.7	12.2	97	92	Medium	2.9
Illinois 21 (Mountjoy).....	100.7	9.7	96	93	Medium	3.5
Illinois 1246 (Mountjoy).....	96.9	10.7	92	95	M-low	3.3
Illinois 1570 (Stone).....	108.2	10.5	85	98	M-high	3.1
Keystone 38A.....	95.8	12.4	96	80	M-high	2.7
Keystone 48.....	96.3	11.1	93	90	Low	2.9
Lowe 505.....	91.7	12.3	93	88	M-high	2.8
Lowe 520.....	95.2	10.9	96	89	Medium	3.0
Lowe 523.....	99.8	10.6	89	96	Medium	3.2
Moews 523.....	95.1	10.5	93	90	M-high	3.0
Moews 524.....	98.4	11.3	97	93	Medium	3.1
Moews 5039.....	94.3	9.9	94	91	Low	3.6
Moews 5040.....	77.6	9.8	94	93	M-low	3.3
Morton M-12.....	107.7	10.4	97	96	Medium	3.0
Morton M-70.....	108.2	12.3	91	95	Medium	3.0
Mountjoy M-64.....	96.8	9.9	98	90	Low	3.4
Mountjoy M-114.....	103.5	10.6	90	92	Medium	3.0
Munson M-13.....	102.8	10.4	87	94	Medium	3.1
Munson M-119.....	105.1	10.2	90	94	M-high	3.2
Ohio C-92 (Castle).....	115.3	12.3	89	98	M-high	2.7
P.A.G. 164.....	102.6	10.4	94	92	Medium	3.4
P.A.G. 170.....	93.4	10.2	96	84	M-low	3.7
P.A.G. 173.....	100.7	11.0	92	89	High	2.9
P.A.G. 392.....	96.2	9.7	95	84	Medium	3.4
P.A.G. 403.....	96.0	10.9	98	96	M-low	3.0
Pioneer 301.....	111.7	10.1	98	93	Low	3.2
Pioneer 302.....	107.5	12.2	84	99	High	2.0
Pioneer 313B.....	99.6	10.7	93	94	M-high	3.2
Pioneer 6063.....	104.7	13.5	94	97	Medium	3.0
Pioneer 9781.....	90.5	12.3	97	96	Low	2.9
Producers 13-1.....	102.0	12.2	86	94	High	2.9
Producers 525.....	93.2	10.0	92	90	Low	3.2
Producers 730.....	96.4	11.6	93	88	Medium	3.0
Producers 900.....	96.7	10.5	94	92	Medium	3.2
Producers 940.....	96.6	10.5	95	88	Medium	2.9
Schwenk S-24.....	106.6	10.4	93	96	M-high	3.1
Schwenk S-25.....	104.0	10.3	94	92	M-high	3.1
Stiegelmeier S-300.....	92.8	10.3	98	88	M-low	2.7
Stiegelmeier S-301.....	105.3	13.2	93	91	M-low	2.6
Tiemann T-61.....	91.2	9.9	97	90	Low	3.7
Tiemann T-72.....	101.9	10.5	97	89	M-low	3.0
Tiemann T-78.....	106.1	10.3	95	94	Medium	3.0
Trisler T-19B.....	94.0	9.9	96	87	Low	3.4
Trisler T-32.....	95.9	11.6	98	87	M-low	2.8
Trisler T-32B.....	108.4	12.2	95	90	M-low	2.6
Trisler T-33B.....	101.0	11.6	94	93	M-high	2.7
U.S. 13 (Stone).....	101.4	10.2	90	93	High	3.1
Whisnand 419.....	102.3	10.3	97	90	Low	3.2
Whisnand 804.....	97.1	13.2	93	93	High	3.0
Whisnand 810.....	102.2	11.0	91	95	M-high	3.0
Average of all entries.....	100.9	11.7	94	92	.....	3.0

^a The scale used was 0 to 5, the higher rating indicating the greater damage.

Table 9. — SOUTHERN ILLINOIS: Brownstown

Entry	Total acre yield	Moisture in grain at harvest	Erect plants	Stand	Height of ear
SUMMARY 1951-1953: Less than 4.8 bushels difference between total yields of any two entries is not significant.					
	<i>bu.</i>	<i>perct.</i>	<i>perct.</i>	<i>perct.</i>	
Trisler T-33A.....	74.7	15.7	94	93	Medium
Moews CB 60A.....	73.3	16.5	95	91	Medium
Ainsworth X-14-3.....	73.2	15.1	93	92	Medium
Ainsworth X-13-3.....	72.4	15.6	96	94	M-high
Whisnand 851.....	71.8	17.5	94	92	Medium
Illinois 1570 ^a	71.7	15.9	93	91	Medium
Funk G-91.....	70.6	16.8	96	91	Medium
U.S. 13 ^b	70.4	15.5	96	93	M-high
P.A.G. 383.....	69.5	15.1	95	92	M-low
Pioneer 302.....	69.5	16.5	95	93	M-high
Tiemann T-72.....	69.4	15.0	94	93	M-low
Doubet D-43.....	69.3	16.3	95	90	M-low
Crow 821.....	69.0	15.1	93	92	Medium
P.A.G. 631(W).....	68.9	19.8	93	90	M-high
Canterbury 126.....	68.8	14.6	94	91	Medium
P.A.G. 620(W).....	68.8	18.6	96	91	M-high
Doubet D-41.....	66.6	16.5	94	89	Medium
Funk G-134.....	66.4	18.9	96	93	M-high
Crow 805.....	65.8	14.6	96	91	Medium
Haudrich 13.....	65.0	16.5	96	93	Medium
Illinois 1459 (Station).....	64.4	18.3	96	95	High
Illinois 2214(W) (Station).....	63.9	19.7	96	89	M-high
Whisnand 834.....	62.6	17.1	93	90	Medium
DeKalb 876.....	62.3	15.7	95	95	M-high
DeKalb 898.....	61.2	18.3	95	93	M-high
DeKalb 894.....	58.3	18.0	88	91	High
Keystone 111(W).....	56.6	19.6	93	90	High
Average of all entries.....	67.6	16.8	94	92	.....

1953 RESULTS: Less than 7.8 bushels difference between
total yields of any two entries is not significant.

A.E.S. 805 (Station).....	41.8	13.6	98	91	Medium
Ainsworth X-13-3.....	50.0	13.1	97	98	M-high
Ainsworth X-14-3.....	54.7	12.4	96	89	Medium
Ainsworth X-760.....	32.5	13.8	96	93	M-low
Ainsworth X-805.....	40.5	13.8	98	98	Medium
Appl 130.....	42.8	12.4	97	90	M-low
Appl 159.....	44.4	14.1	98	98	Medium
Bear OK-30.....	36.0	13.2	98	98	M-low
Bear OK-50A.....	42.7	14.1	99	95	M-low
Bear OK-66A.....	38.2	13.3	97	97	M-low
Bear OK-72B.....	43.2	12.9	99	95	M-low
Canterbury 126.....	45.2	11.4	95	95	M-high
Canterbury 400.....	45.6	13.2	98	97	M-high
Canterbury 420.....	46.0	12.9	98	97	Medium
Crow 805.....	39.6	12.0	98	92	Medium
Crow 821.....	45.3	11.9	96	94	M-high
Crow 825.....	40.7	12.0	98	80	Medium
DeKalb 816.....	34.9	14.1	98	93	M-high
DeKalb 875.....	38.0	12.2	98	95	Medium
DeKalb 876.....	29.5	12.8	99	95	M-high
DeKalb 894.....	28.4	16.8	98	93	High
DeKalb 898.....	25.9	17.4	98	96	High
DeKalb 923(W).....	13.5	18.1	98	91	High
Doubet D-41.....	40.3	14.7	96	86	Medium
Doubet D-43.....	48.9	12.8	97	91	M-low

^a Average of Illinois 1570 (Station), 1951, Illinois 1570 (Mountjoy), 1952, and Illinois 1570 (Plymouth), 1953.

^b Average of U.S. 13 (Station), 1951, U.S. 13 (Morton), 1952, and U.S. 13 (Plymouth), 1953.

(Table is concluded on next page)

Table 9. — SOUTHERN ILLINOIS: Brownstown — concluded

Entry	Total acre yield	Moisture in grain at harvest	Erect plants	Stand	Height of ear
1953 RESULTS — concluded					
Embryo 49.....	32.0	18.3	98	93	Medium
Funk G-91.....	40.5	15.0	99	90	Medium
Funk G-134.....	32.7	17.8	98	95	High
Haudrich 13.....	45.2	13.3	99	97	M-high
Haudrich 126.....	41.5	12.4	96	91	M-low
Haudrich 200.....	24.1	16.9	98	97	High
Haudrich 784.....	25.2	17.8	96	93	High
Huey H-23.....	42.7	13.4	95	98	Medium
Huey H-50.....	45.5	12.1	97	95	M-low
Huey H-106.....	41.6	11.7	98	93	Medium
Illinois 1570 (Plymouth).....	49.0	13.6	95	94	M-high
Illinois 1459 (Station).....	25.7	17.2	98	97	High
Illinois 1636 (Mountjoy).....	43.7	11.2	98	96	Medium
Illinois 1831 (Station).....	32.5	17.5	96	95	High
Illinois 2214(W) (Station).....	16.5	19.9	98	92	High
Keystone 38A.....	42.1	13.2	98	80	Medium
Keystone 111(W).....	17.6	18.5	99	90	High
Lowe 514.....	50.6	12.0	97	88	Medium
Lowe 523.....	42.9	12.0	97	89	M-low
Lowe 844.....	31.6	14.7	99	90	Medium
Moews 523.....	41.3	11.6	98	92	Medium
Moews 5035.....	48.3	13.8	97	95	M-low
Moews 5041.....	30.3	11.9	99	87	Low
Moews CB 60A.....	48.3	14.5	98	91	M-high
Moews CB 69A.....	36.0	13.1	91	89	High
Moews CB 70A.....	37.7	12.1	98	93	Medium
Munson M-15.....	46.0	14.1	99	97	Medium
Munson M-119.....	50.2	12.9	99	93	M-high
P.A.G. 383.....	47.6	12.9	96	94	Low
P.A.G. 403.....	46.0	12.0	98	95	M-low
P.A.G. 486.....	42.5	18.4	95	90	High
P.A.G. 620(W).....	31.5	18.5	99	93	High
P.A.G. 631(W).....	36.1	18.1	94	92	M-high
P.A.G. 636(W).....	35.3	20.7	97	95	High
Plymouth P-38.....	50.7	11.0	98	93	Medium
Pioneer 301B.....	34.8	14.6	98	95	M-low
Pioneer 302.....	33.6	13.6	97	96	High
Pioneer 0487.....	28.3	15.9	97	94	M-high
Pioneer 6727.....	40.0	12.5	97	97	High
Pioneer 9212.....	41.0	13.4	98	97	High
Pioneer 9813.....	42.2	14.1	98	91	M-low
Producers 13-1.....	46.8	12.5	98	91	Medium
Producers 946.....	45.4	12.7	98	91	Medium
Producers 1018.....	46.5	12.5	96	88	Medium
Producers 1022.....	31.1	13.0	95	96	Medium
Producers 1050.....	49.9	12.5	96	94	M-high
Stiegelmeier S-200.....	30.3	13.4	99	94	M-low
Tiemann T-61.....	46.8	12.4	97	97	Low
Tiemann T-72.....	50.2	13.4	99	99	M-low
Tiemann T-78.....	56.1	11.6	97	97	M-low
Trisler T-32B.....	47.9	13.3	97	91	M-low
Trisler T-33A.....	59.7	11.9	98	94	Medium
U.S. 13 (Plymouth).....	57.6	11.2	97	95	M-high
Whisnand 810.....	42.4	12.4	97	96	M-high
Whisnand 834.....	30.6	14.5	99	92	Medium
Whisnand 851.....	33.4	14.1	98	95	Medium
Average of all entries.....	39.9	13.9	97	93	.....

Table 10. — EXTREME SOUTHERN ILLINOIS: Ridgway
1952, 1953; Dixon Springs 1951

Entry	Total acre yield	Moisture in grain at harvest	Erect plants	Stand	Height of ear	Stalk rot damage*
SUMMARY 1951-1953: Less than 6.8 bushels difference between total yields of any two entries is not significant.						
	bu.	perct.	perct.	perct.		perct.
Funk G-711.....	65.2	20.1	93	88	High	....
P.A.G. 620 (W).....	63.6	17.7	96	85	High	....
Pioneer 302.....	60.3	18.3	98	91	M-high	....
Whisnand 917(W).....	56.9	16.7	98	82	M-high	....
Moews CB 70A.....	54.7	14.3	97	90	Medium	....
Whisnand 851.....	54.0	17.2	97	87	Medium	....
Moews CB 90A.....	53.0	16.8	95	87	M-high	....
Whisnand 834.....	52.9	17.8	97	84	M-high	....
Haudrich 13.....	52.1	15.3	97	88	Medium	....
Lowe 833.....	52.1	17.6	95	86	High	....
Bear OK-90.....	51.0	16.7	96	89	Medium	....
DeKalb 894.....	50.5	17.3	95	81	Medium	....
Crow 821.....	47.8	14.4	98	81	M-low	....
Doubet D-41.....	47.3	15.2	97	84	Medium	....
Keystone 111(W).....	46.6	18.8	98	86	M-high	....
Doubet D-43.....	46.1	15.1	96	81	Medium	....
Super-Crost 880.....	41.7	14.8	97	84	M-low	....
Average of all entries.....	52.7	16.7	96	86	.....	....
1953 RESULTS: Less than 11.8 bushels difference between total yields of any two entries is not significant.						
Ainsworth X-13-3.....	101.6	14.1	98	90	Medium	21.9
Ainsworth X-14-3.....	93.4	15.5	98	79	M-low	14.1
Ainsworth X-14A.....	117.3	15.6	97	90	Medium	21.6
Bear OK-66.....	88.7	15.6	99	83	M-low	12.5
Bear OK-89.....	87.4	19.5	98	88	Medium	11.6
Bear OK-90.....	89.4	17.1	99	82	M-low	6.3
Crow 805.....	93.2	13.6	99	83	Low	18.3
Crow 821.....	83.1	13.9	98	83	M-low	19.1
Crow 825.....	103.9	13.8	99	72	M-low	9.1
DeKalb 894.....	99.4	18.2	98	79	High	18.7
DeKalb 898.....	101.2	16.8	97	87	High	15.1
DeKalb 910 (W).....	112.7	18.5	97	90	High	7.5
DeKalb 923(W).....	99.5	17.6	97	75	Medium	14.4
DeKalb 925(W).....	113.9	18.7	98	90	M-high	11.0
Doubet D-41.....	84.0	14.1	99	82	M-low	27.6
Doubet D-43.....	77.1	13.7	98	74	Medium	22.2
Embro 49.....	90.1	15.4	99	87	M-high	15.3
Embro 155(W).....	95.3	17.2	97	70	High	3.5
Funk G-134.....	90.1	18.2	98	84	M-high	12.0
Funk G-512(W).....	97.0	16.5	97	76	High	20.4
Funk G-711.....	120.3	16.5	97	82	High	11.5
Haudrich 10(W).....	104.5	16.7	98	82	High	8.0
Haudrich 13.....	88.2	14.4	99	90	Medium	21.1
Haudrich 21.....	91.3	14.6	98	90	Low	22.7
Haudrich 126.....	87.3	14.2	98	80	M-low	24.0
Haudrich 200.....	99.2	14.5	98	81	High	7.2
Illinois 2119(W).....	93.0	17.3	98	68	High	3.0
Keystone 107(W).....	99.7	18.6	98	81	High	3.6
Keystone 111(W).....	79.5	18.8	98	75	M-high	17.5
Keystone 222A.....	87.4	19.2	96	78	M-high	15.8

* As determined by percentage of prematurely dead plants on September 29.

(Table is concluded on next page)

Table 10. — EXTREME SOUTHERN ILLINOIS:
Ridgway — concluded

Entry	Total acre yield	Moisture in grain at harvest	Erect plants	Stand	Height of ear	Stalk rot damage ^a
1953 RESULTS — concluded						
	<i>bu.</i>	<i>perct.</i>	<i>perct.</i>	<i>perct.</i>		<i>perct.</i>
Lowe 833.....	93.5	17.6	98	88	High	11.5
Lowe 840A.....	86.4	17.6	97	81	High	14.2
Lowe 855(W).....	96.1	18.5	96	83	High	20.4
Moews CB 60A.....	97.8	15.7	97	88	Medium	13.1
Moews CB 69A.....	95.9	16.8	99	82	M-high	17.5
Moews CB 70A.....	93.1	14.7	99	88	Low	13.2
Moews CB 90A.....	101.1	14.3	99	84	Medium	17.7
P.A.G. 403.....	93.5	13.8	99	90	Low	20.7
P.A.G. 484.....	106.6	19.1	97	85	High	7.3
P.A.G. 486.....	101.4	20.2	95	84	High	22.6
P.A.G. 620(W).....	107.6	18.3	96	83	High	9.8
P.A.G. 631(W).....	97.6	20.1	95	85	High	21.9
Pioneer 301B.....	100.5	13.1	99	83	M-low	12.9
Pioneer 302.....	105.8	18.1	97	87	M-high	4.5
Pioneer 6727.....	110.7	15.2	96	87	M-high	20.3
Pioneer 9212.....	110.6	15.2	97	95	M-high	6.4
Pioneer 9813.....	88.8	16.5	99	84	Low	17.6
Producers 13-1.....	88.7	15.2	99	85	M-high	15.8
Producers 1022.....	106.2	14.4	99	90	Low	19.5
Producers 1050.....	99.5	14.2	98	88	Medium	11.8
Stiegelmeier S-600.....	96.1	18.2	99	92	Medium	17.2
Stull 400(W).....	90.3	15.5	98	73	High	16.1
Super-Crost 880.....	71.3	14.7	99	75	Low	24.5
Tiemann T-61.....	82.0	14.6	99	85	Low	35.1
Tiemann T-78.....	98.8	15.0	96	91	Low	20.6
U.S. 13 (Station).....	102.2	15.1	99	82	M-high	14.1
Whisnand 810.....	85.2	13.8	99	81	M-low	23.2
Whisnand 834.....	97.1	15.9	99	80	Medium	11.6
Whisnand 851.....	88.0	15.9	99	89	Low	21.4
Whisnand 917(W).....	106.7	17.2	98	83	High	6.7
Average of all entries.....	96.1	16.2	98	83	.....	15.4

^a As determined by percentage of prematurely dead plants on September 29.

SOIL AND PLANTING RATE ADAPTATION TEST

Nine single-cross hybrids were tested at Urbana for their adaptation to different fertility levels and rate of planting (Table 11). The single crosses are widely used as parents for commercial double crosses sold in Illinois. All plots were hand-planted and later thinned to the desired stand.

Soils. The two areas used for the test are on the Agronomy south farm. They differ in productivity as a result of long-continued use of different cropping systems. A high level of productivity in the one field has been maintained by a rotation of corn, oats, clover hay, and wheat with a red clover catch crop. The other field has been depleted of fertility by a rotation of corn, corn, corn, and soybeans and is only medium productive. The crop

Table 11.—SOIL AND PLANTING RATE ADAPTATION TEST:
Central Illinois, Urbana, 1952 and 1953

Rank	Entry	Yield per acre with varying number of plants per acre						Average yield, all planting rates
		4,000 plants	8,000 plants	12,000 plants	16,000 plants	20,000 plants	24,000 plants	
Highly productive soil: ^a Summary 1952-1953								
		<i>bu.</i>	<i>bu.</i>	<i>bu.</i>	<i>bu.</i>	<i>bu.</i>	<i>bu.</i>	<i>bu.</i>
1	Hy2 × Oh7.....	58.5	87.5	113.9	131.3	143.2	128.1	110.4
2	WF9 × Oh41.....	55.1	90.3	112.1	123.8	126.3	118.1	104.3
3	WF9 × 38-11.....	63.8	89.7	108.5	120.9	117.2	109.2	101.5
4	WF9 × Oh7.....	53.6	89.5	107.8	115.4	122.1	108.1	99.4
5	WF9 × C103.....	55.1	95.0	112.3	113.6	112.4	91.7	96.7
6	WF9 × Oh45.....	52.5	91.2	110.4	116.9	112.1	96.4	96.6
7	WF9 × Hy2.....	50.8	92.3	103.8	109.9	110.3	92.1	93.2
8	WF9 × M-14.....	49.4	88.9	101.3	108.1	111.1	98.8	92.9
9	WF9 × 187-2.....	51.6	83.3	94.3	107.4	104.7	95.9	89.5
	Average.....	54.5	89.7	107.1	116.4	117.7	104.3	98.3
Differences necessary for significance: in planting-rate averages, 5.9 bushels; in variety averages, 3.0 bushels								

1953 Results

1	Hy2 × Oh7.....	58.6	85.6	113.6	134.0	157.4	133.5	113.8
2	WF9 × C103.....	53.4	87.8	121.6	131.3	139.7	124.9	109.8
3	WF9 × Oh41.....	54.8	88.9	109.7	124.4	131.9	122.5	105.4
4	WF9 × Oh45.....	51.4	87.7	113.8	130.5	132.0	116.1	105.2
5	WF9 × 38-11.....	69.1	82.9	109.2	127.3	125.9	115.0	104.9
6	WF9 × Oh7.....	50.5	86.8	100.9	116.7	133.6	117.9	101.1
7	WF9 × Hy2.....	48.7	93.7	108.6	117.1	119.6	106.0	99.0
8	WF9 × M-14.....	48.5	86.5	96.2	110.5	122.4	101.2	94.2
9	WF9 × 187-2.....	45.0	78.6	90.0	105.4	104.8	98.6	87.1
	Average.....	53.3	86.5	107.1	121.9	129.7	115.1	102.3
Differences necessary for significance: in planting-rate averages, 7.1 bushels; in variety averages, 4.6 bushels								

Medium productive soil:^b Summary 1952-1953

1	Hy2 × Oh7.....	45.4	75.1	83.8	79.8	77.5	76.1	72.9
2	WF9 × Oh41.....	50.2	73.2	82.7	83.5	57.9	51.1	66.4
3	WF9 × Oh7.....	42.4	69.2	78.5	61.5	65.0	53.6	61.7
4	WF9 × M-14.....	42.1	70.3	76.7	61.3	61.0	55.4	61.1
5	WF9 × 38-11.....	51.1	72.0	75.5	56.1	55.8	42.0	58.7
6	WF9 × Hy2.....	43.1	67.9	68.1	64.8	64.3	40.8	58.2
7	WF9 × Oh45.....	44.4	70.2	69.8	55.7	46.6	40.2	54.5
8	WF9 × C103.....	51.2	71.0	70.1	58.0	43.9	32.4	54.4
9	WF9 × 187-2.....	41.4	62.6	65.4	47.6	50.3	38.8	51.0
	Average.....	45.7	70.2	74.5	63.1	58.0	47.8	59.9
Differences necessary for significance: in planting-rate averages, 7.4 bushels; in variety averages, 3.2 bushels								

1953 Results

1	Hy2 × Oh7.....	46.6	75.4	83.4	85.6	74.1	78.3	73.9
2	WF9 × Oh41.....	51.1	77.0	87.8	93.4	61.7	58.2	71.5
3	WF9 × M-14.....	40.2	72.0	78.9	72.1	65.3	60.0	64.7

^a Highly productive soil: mostly Flanagan silt loam, slightly rolling phase. Rotation: corn, oats, clover, wheat (red clover catch crop). Soil treatment: manure, limestone, and rock phosphate.

^b Medium productive soil: mostly Flanagan silt loam, slightly rolling phase. Third year corn after soybeans in a rotation of soybeans, corn, corn, corn. Soil treatment: manure, limestone, and rock phosphate.

(Table is concluded on next page)

Table 11. — URBANA — concluded

Rank	Entry	Yield per acre with varying number of plants per acre						Average yield, all planting rates
		4,000 plants	8,000 plants	12,000 plants	16,000 plants	20,000 plants	24,000 plants	
		<i>bu.</i>	<i>bu.</i>	<i>bu.</i>	<i>bu.</i>	<i>bu.</i>	<i>bu.</i>	<i>bu.</i>
4	WF9 × Oh7.....	41.7	69.0	82.8	67.6	69.5	48.5	63.2
5	WF9 × Oh45.....	45.5	73.5	80.1	66.5	60.4	48.3	62.4
6	WF9 × C103.....	52.3	71.8	81.6	68.7	50.8	45.0	61.7
7	WF9 × 38-11.....	52.9	71.7	80.4	58.1	58.9	42.1	60.7
8	WF9 × Hy2.....	41.8	68.4	68.3	70.4	67.7	46.2	60.5
9	WF9 × 187-2.....	36.1	60.8	66.0	51.4	59.4	41.0	52.4
	Average.....	45.3	71.1	78.8	70.4	63.1	51.9	63.4

Differences necessary for significance: in planting-rate averages, 8.0 bushels; in variety averages, 4.8 bushels

Medium productive soil with 70 pounds of nitrogen side-dressed
at second cultivation:^c Summary 1952-1953

1	Hy2 × Oh7.....	45.0	82.0	97.3	108.8	114.6	97.4	90.8
2	WF9 × Oh41.....	48.8	82.4	94.6	103.6	95.2	88.0	85.4
3	WF9 × Oh7.....	44.4	75.8	92.6	93.6	93.6	83.0	80.5
4	WF9 × 38-11.....	53.4	80.2	90.0	94.5	86.6	73.0	79.6
5	WF9 × M-14.....	46.7	77.0	90.0	88.3	93.6	76.8	78.7
6	WF9 × Oh45.....	48.0	80.3	88.6	89.3	85.1	70.0	76.9
7	WF9 × C103.....	52.6	86.8	84.2	85.4	76.1	57.1	73.7
8	WF9 × 187-2.....	43.2	68.4	84.0	83.8	82.4	73.9	72.6
9	WF9 × Hy2.....	46.0	77.4	87.5	84.9	78.6	58.8	72.2
	Average.....	47.6	78.9	89.9	92.5	89.5	75.3	78.9

Differences necessary for significance: in planting-rate averages, 6.6 bushels; in variety averages, 2.6 bushels

1953 Results

1	Hy2 × Oh7.....	43.2	81.3	91.2	107.2	105.3	90.1	86.4
2	WF9 × Oh41.....	45.8	81.0	92.6	101.7	98.3	89.7	84.8
3	WF9 × Oh45.....	47.0	76.6	92.0	100.0	95.4	82.9	82.3
4	WF9 × Oh7.....	42.8	77.9	90.1	92.7	93.5	81.6	79.8
5	WF9 × C103.....	52.0	84.7	88.1	89.9	85.4	71.0	75.5
6	WF9 × M-14.....	45.3	72.0	86.7	87.8	87.2	72.7	75.3
7	WF9 × 38-11.....	53.9	75.5	83.4	91.9	80.1	61.5	74.4
8	WF9 × Hy2.....	45.1	77.0	86.6	85.7	80.8	51.2	71.1
9	WF9 × 187-2.....	39.5	64.4	79.2	82.9	82.4	72.0	70.1
	Average.....	46.1	76.7	87.8	93.3	89.8	74.7	78.1

Differences necessary for significance: in planting-rate averages, 8.2 bushels; in variety averages, 3.7 bushels

^c Same field as b, with nitrogen added.

reported was the third crop of corn after soybeans. This medium-productive field was divided, half receiving 70 pounds of nitrogen side-dressed at the second cultivation.

The predominating soil type on both fields is a slightly rolling Flanagan silt loam; both fields have been treated with manure, limestone, and rock phosphate.

Season. An extended dry period occurred in late summer, but it did not greatly reduce yields. Harvest was purposely delayed until late November so that the mature plants might be exposed to the strong winds of late autumn and data concerning broken stalks recorded. Even so, lodging was insignificant.

1953 yields. The average yield of all hybrids at all rates on the highly productive soil was 102.3 bushels an acre, which was 38.9 bushels, or 61 percent, more than the yield on the medium-productive soil (Table 11). When 70 pounds of nitrogen was added to the medium-productive soil, an average yield of 78.1 bushels was obtained. This is 14.7 bushels, or 23 percent, more than on the half of this field that did not receive nitrogen.

The highest average yield was obtained on the highly productive field at a planting rate of 20,000 plants to the acre. On the medium-productive field the highest yield was obtained from 12,000 plants an acre; the addition of nitrogen to this field resulted in an average of 16,000 plants producing the maximum yield. The response to nitrogen was greater at the high-planting rates.

In general, the various hybrids ranked approximately the same in yield on all fertility levels. The exception to this was the single-cross WF9 \times C103 which ranked somewhat higher on the high-fertilization level than on the two lower levels.

Single-cross Hy2 \times Oh7 again exhibited the capacity to yield well at high-planting rates.

Summary 1952-1953 yields. The yield comparisons in Table 11 indicate that corn yield may be increased by developing hybrids adapted to higher-planting rates. On the high-fertility field the hybrid that gave the highest yield was Hy2 \times Oh7. At a rate of 20,000 plants per acre, its record was 143 bushels. The average yield of all nine hybrids planted at this rate was 118 bushels, one hybrid giving only 105 bushels.

However, the highest yield produced by any rate of planting was seldom significantly higher than the yield produced by one or two other rates (see differences necessary for significance, Table 11). For example, where nitrogen was applied to the medium-productive soil, planting rates of 12, 16, and 20 thousand plants to the acre produced very similar yields: 89.9, 92.5, and 89.5 bushels an acre respectively. From a practical standpoint, growers should lean toward the thinner rate, for there are two possible hazards to planting at thicker rates: (1) increased lodging, and (2) deficient moisture during the growing season. At the thinner rates, a more uniform and higher quality of corn

can be picked. When there are more than 16,000 plants to the acre, these risks increase tremendously with present-day hybrids.

It is evident that hybrids can be developed that will give extremely good yields at the higher-planting rates; but if these hybrids are to be of great practical importance, they must also be superior in their resistance to lodging and carry considerable drouth resistance.

SUMMARY

In 1953, 268 hybrids were grown on five test fields in Illinois. Nine single-cross hybrids were grown at Urbana in a rate of planting trial on three fields differing in productivity. Growing conditions were excellent at all locations except Brownstown. There an extended dry period commencing in July greatly reduced yield.

1953 yields. The DeKalb field in northern Illinois had the highest yield, 101.4 bushels an acre. Average yields per acre on the other test fields were: Urbana, 100.9, Ridgway, 96.1, Galesburg, 92.7, Brownstown, 39.9.

The average yield of all hybrids tested was 85.4 bushels. This was three percent below the 1952 average at the same locations.

Three-year summaries, 1951-1953. The highest-yielding hybrids in the three-year summaries were the following:

Northern Illinois — Illinois 1277, Bear OK-411, Illinois 1091A, Pioneer 347, Illinois 1280.

West North-Central — Holmes 39, Ainsworth X-21, Pioneer 313B, DeKalb 800A, Illinois 1570, Pioneer 301.

Central — Pioneer 302, Canterbury 400, Doubet D-43, Funk G-91, U.S. 13, Pioneer 301.

Southern — Trisler T-33A, Moews CB 60A, Ainsworth X-14-3, Ainsworth X-13-3, Whisnand 851, Illinois 1570.

Extreme Southern — Funk G-711, P.A.G. 620 (W), Pioneer 302, Whisnand 917(W), Moews CB 70A, Whisnand 851.

Lodging. Lodging was important only at Galesburg. Significant differences were found for varieties in this characteristic.

Moisture. The moisture percent in the grain was far below normal, the average for all hybrids being 14.3 percent.

Insect damage. At only one location was insect damage severe enough to record. At Galesburg counts of broken stalks and dropped ears indicated significant differences between hybrids in their reaction to corn borer.

Disease damage. Smut and Stewart's disease were more prevalent than usual. Data on the reaction of 32 inbreds and 81 hybrids to Stewart's disease at Urbana are given. Data on the reaction of hybrids to stalk rot by a combination of diplodia and gibberella were obtained at and are given for Galesburg and Ridgway. Stalk rot damage was very low in the other tests.

Seed treatment test. Increases in yield of 6.1 bushels per acre in the May 4 planting and 4.0 bushels per acre in the May 19 planting were obtained with Arasan at $\frac{1}{2}$ ounce per bushel, the treatment and rate now in most common use. Thiram Naugets and Orthocide 75 are also being recommended.

Effect of planting rate and soil productivity. In two-year summaries at Urbana hybrids ranked approximately the same in yield on all fertility levels, but they responded quite differently to different planting rates. Single-cross Hy2 \times Oh7 yielded high at the high-planting rates. In the 1952 test WF9 \times C103 yielded very high at the low-planting rates and showed a rapid decrease in yield as the rate increased. At high-fertility levels this trend was not evident in the 1953 tests.

Hybrids can evidently be developed that will yield extremely well at high-planting rates, but these hybrids must also carry superior lodging resistance and considerable drouth resistance to be of practical importance.

INDEX TO ENTRIES

When a hybrid appears in the summary portion of a table, the table number in this index is printed in **black** type.

A		B	
Hybrid	Table	Hybrid	Table
A.E.S. 702 (Station).....	6	Bear OK-20.....	3, 7
A.E.S. 805 (Station).....	9	Bear OK-24.....	3, 7
A.E.S. 805 (Stone).....	8	Bear OK-25.....	3, 7, 8
Ainsworth X-12.....	6, 6	Bear OK-28.....	6
Ainsworth X-13-3.....	3, 7, 7, 8, 8, 9, 9, 10	Bear OK-30.....	9
Ainsworth X-14A.....	10	Bear OK-50.....	8
Ainsworth X-14-3.....	8, 8, 9, 9, 10	Bear OK-60.....	9
Ainsworth X-21.....	3, 7, 7	Bear OK-66A.....	8
Ainsworth X-702.....	3, 7	Bear OK-66.....	10
Ainsworth X-760.....	9	Bear OK-66A.....	9
Ainsworth X-805.....	9	Bear OK-72.....	8
Appl 130.....	8, 9	Bear OK-72B.....	9
Appl 159.....	8, 9	Bear OK-89.....	10
		Bear OK-90.....	10, 10
		Bear OK-111.....	6, 6

C

Hybrid	Table
Canterbury 126.....	9, 9
Canterbury 400.....	8, 8, 9
Canterbury 404.....	8, 8
Canterbury 420.....	8, 8, 9
Crow 260.....	6, 6
Crow 402.....	3, 6, 7
Crow 407.....	3, 7
Crow 432.....	6, 6
Crow 487.....	3, 6, 7
Crow 608.....	3, 7, 8, 8
Crow 638.....	8
Crow 805.....	9, 9, 10
Crow 821.....	9, 9, 10, 10
Crow 825.....	8, 9, 10

D

DeKalb 404A.....	6, 6
DeKalb 406.....	6, 6
DeKalb 408.....	6, 6
DeKalb 455.....	6, 6
DeKalb 458.....	6, 6
DeKalb 628A.....	8
DeKalb 666.....	3, 7
DeKalb 800A.....	3, 7, 7, 8
DeKalb 816.....	3, 7, 9
DeKalb 847.....	3, 7, 8
DeKalb 850.....	3, 7, 8
DeKalb 875.....	8, 8, 9
DeKalb 876.....	9, 9
DeKalb 894.....	9, 9, 10, 10
DeKalb 898.....	9, 9, 10
DeKalb 910(W).....	10
DeKalb 923(W).....	9, 10
DeKalb 925(W).....	10
Doubet D-25.....	3, 6, 7, 8
Doubet D-41.....	3, 7, 8, 8, 9, 9, 10, 10
Doubet D-43.....	3, 7, 7, 8, 8, 9, 9, 10, 10
Doubet D-45.....	6

E

Embro 49.....	9, 10
Embro 155(W).....	10

F

Frey 410.....	6
Frey 425.....	6, 6
Frey 645.....	8
Frey 692.....	8
Frey 892.....	8
Funk G-16A.....	6, 6
Funk G-77A.....	3, 6, 6, 7, 7, 8
Funk G-91.....	8, 8, 9, 9
Funk G-95.....	3, 7, 8
Funk G-95A.....	3, 7, 8
Funk G-134.....	9, 9, 10
Funk G-512(W).....	10
Funk G-711.....	10, 10

G

Griffith 129.....	3, 7
-------------------	------

H

Haudrich 10(W).....	10
Haudrich 13.....	9, 9, 10, 10
Haudrich 21.....	10
Haudrich 126.....	9, 10
Haudrich 200.....	9, 10
Haudrich 784.....	9
Holmes 11A.....	6, 6
Holmes 13.....	8
Holmes 17.....	6
Holmes 19A.....	3, 6, 7, 7
Holmes 39.....	3, 7, 7, 8
Huebsch H-24.....	6
Huebsch H-81.....	6

Hybrid	Table
Huey H-23.....	3, 7, 7, 9
Huey H-42.....	3, 7, 7
Huey H-50.....	9
Huey H-106.....	9
Huey H-235.....	3, 7
Hulting 102.....	3, 7
Hulting 238.....	6
Hulting 240.....	6
Hulting 241.....	3, 6, 7

I

Illinois 21 (Dittmer).....	3, 7, 7
Illinois 21 (Mountjoy).....	8, 8
Illinois 101 (Huebsch).....	6, 6
Illinois 1091A (Dittmer).....	6, 6
Illinois 1180 (Huebsch).....	6
Illinois 1246 (Mountjoy).....	8
Illinois 1277 (Huebsch).....	6, 6
Illinois 1279 (Station).....	6
Illinois 1280 (Station).....	6, 6
Illinois 1289 (Station).....	6, 6
Illinois 1459 (Station).....	9, 9
Illinois 1570 (Plymouth).....	9, 9
Illinois 1570 (Station).....	3, 7, 7
Illinois 1570 (Stone).....	8, 8
Illinois 1656 (Mountjoy).....	9
Illinois 1800 (Station).....	6
Illinois 1813 (Station).....	3, 7
Illinois 1851 (Station).....	9
Illinois 2119(W) (Lovell).....	10
Illinois 2214(W) (Station).....	9, 9

K

Keystone 32.....	6, 6
Keystone 38A.....	8, 9
Keystone 44.....	6, 6
Keystone 48.....	3, 7, 7, 8
Keystone 107(W).....	10
Keystone 111(W).....	9, 9, 10, 10
Keystone 222A.....	10

L

Lowe 315.....	6
Lowe 322.....	6
Lowe 377.....	6
Lowe 505.....	8
Lowe 514.....	3, 7, 7, 9
Lowe 520.....	3, 7, 7, 8, 8
Lowe 523.....	8, 8, 9
Lowe 833.....	10, 10
Lowe 840A.....	10
Lowe 844.....	9
Lowe 855(W).....	10

M

Moews 14.....	6
Moews 14E.....	6
Moews 14L.....	3, 7
Moews 80.....	6
Moews 85.....	6
Moews 86.....	6
Moews 500.....	3, 7
Moews 520.....	3, 7
Moews 523.....	8, 9
Moews 524.....	3, 7, 8
Moews 5035.....	9
Moews 5039.....	8
Moews 5040.....	8
Moews 5041.....	9
Moews CB 60A.....	9, 9, 10
Moews CB 69A.....	9, 10
Moews CB 70A.....	9, 10, 10
Moews CB 90A.....	10, 10
Morton M-12.....	3, 7, 7, 8, 8
Morton M-70.....	3, 7, 7, 8, 8
Morton M-303.....	3, 7
Mountjoy M-42.....	6, 6

Hybrid	Table
Mountjoy M-64	8
Mountjoy M-114	8
Munson M-5	3, 6, 7, 7
Munson M-13	3, 7, 7, 8, 8
Munson M-15	9
Munson M-77	6
Munson M-119	3, 7, 8, 9

N

Nichols 5A	6
Nichols 5B	6, 6
Nichols 51	6
Nichols 75A	6
Null N-83	3, 7

O

Ohio C-92 (Castle)	8
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P

P.A.G. 164	8
P.A.G. 170	3, 7, 7, 8, 8
P.A.G. 173	8, 8
P.A.G. 233	6
P.A.G. 234	6
P.A.G. 244	6
P.A.G. 277	6, 6
P.A.G. 297	6
P.A.G. 303	3, 7
P.A.G. 381	3, 7
P.A.G. 383	9, 9
P.A.G. 392	3, 7, 7, 8, 8
P.A.G. 403	3, 7, 8, 9, 10
P.A.G. 484	10
P.A.G. 486	9, 10
P.A.G. 620(W)	9, 9, 10, 10
P.A.G. 631(W)	9, 9, 10
P.A.G. 636(W)	9
Pioneer 301	3, 7, 7, 8, 8
Pioneer 301B	9, 10
Pioneer 302	8, 8, 9, 9, 10, 10
Pioneer 313B	3, 7, 7, 8, 8
Pioneer 325	6, 6
Pioneer 337	6, 6
Pioneer 339	3, 7

Pioneer 345	3, 7
Pioneer 346	6
Pioneer 347	6, 6
Pioneer 352	6
Pioneer 0487	9
Pioneer 6063	8
Pioneer 6727	9, 10
Pioneer 9212	9, 10
Pioneer 9781	3, 7, 8
Pioneer 9813	9, 10
Plymouth 37	3, 7
Plymouth 38	3, 7, 7, 9
Producers 13-1	8, 9, 10
Producers 305	6
Producers 311	6
Producers 314	6
Producers 315	6
Producers 510	6
Producers 525	3, 7, 8
Producers 717	3, 7
Producers 730	8
Producers 900	3, 7, 8

Hybrid	Table
Producers 940	3, 7, 8
Producers 946	3, 7, 9
Producers 1018	9
Producers 1022	9, 10
Producers 1050	9, 10

R

Robe 20	3, 7
Robe 71	3, 7

S

Schwenk S-24	3, 7, 7, 8
Schwenk S-25	3, 7, 8
Schwenk S-34	3, 7, 7
Sieben S-320	3, 7
Sieben S-340	3, 6, 6, 7, 7
Sieben S-440E	3, 6, 6, 7
Sieben S-450	6, 6
Sieben S-560	6
Smiley E-4	6
Smiley S	3, 7
Stewart S-51	3, 7, 7
Stewart S-56	3, 7
Stiegelmeier S-200	9
Stiegelmeier S-300	3, 7, 8
Stiegelmeier S-301	3, 7, 8
Stiegelmeier S-379	6
Stiegelmeier S-600	10
Stull 400(W)	10
Super-Crost 880	10, 10

T

Tiemann T-61	3, 6, 6, 7, 7, 8, 9, 10
Tiemann T-72	8, 8, 9, 9
Tiemann T-78	3, 6, 7, 8, 9, 10
Trisler T-19B	3, 7, 8, 8
Trisler T-32	8, 8
Trisler T-32B	8, 9
Trisler T-33A	9, 9
Trisler T-33B	8

U

U.S. 13 (Plymouth)	9, 9
U.S. 13 (Station)	10
U.S. 13 (Stone)	3, 7, 7, 8, 8

W

Whisnand 419	8
Whisnand 804	8, 8
Whisnand 810	3, 7, 8, 8, 9, 10
Whisnand 834	9, 9, 10, 10
Whisnand 851	9, 9, 10, 10
Whisnand 917(W)	10, 10

Single Crosses

Hv2 × Oh7	11
WF9 × 38-11	11
WF9 × 187-2	11
WF9 × C103	11
WF9 × 11y2	11
WF9 × Oh7	11
WF9 × Oh41	11
WF9 × Oh45	11
WF9 × M14	11